

**EPA Superfund
Record of Decision:**

**NATIONAL STARCH & CHEMICAL CORP.
EPA ID: NCD991278953
OU 02
SALISBURY, NC
09/28/1990**

- THE RECORD OF DECISION FOR OPERABLE UNIT 1, SEPTEMBER 30, 1988, PRESENTS THE REMEDY SELECTION FOR THE GROUNDWATER WHICH MITIGATES THE PRINCIPAL THREAT POSED BY THE CONTAMINATED GROUNDWATER AT THE SITE. THE ONLY ROUTE OF MIGRATION FOR THE "TRENCH AREA" SOILS WOULD BE INTO THE CONTAMINATED AQUIFER.
- THE NATURAL INFILTRATION OF PRECIPITATION WILL WORK WITH THE SELECTED GROUNDWATER REMEDY EFFECTIVELY FLUSHING RESIDUAL SOIL CONTAMINATION INTO THE GROUNDWATER CAPTURE ZONE.
- MONITORING OF THE SOILS WILL BE CONDUCTED ON A QUARTERLY BASIS.
- THE RISK ASSESSMENT EVALUATED ALL POTENTIAL EXPOSURE PATHWAYS RELEVANT TO HUMAN EXPOSURE. NO PUBLIC HEALTH THREAT EXISTS DIRECTLY FROM THESE SOILS. THE REMEDY FOR THE POTENTIAL EXPOSURE FROM GROUNDWATER HAS BEEN ADDRESSED WITHIN THE FIRST OPERABLE UNIT RECORD OF DECISION.

SINCE THIS REMEDY WILL RESULT IN HAZARDOUS SUBSTANCES REMAINING ON-SITE, A REVIEW WILL BE CONDUCTED WITHIN FIVE YEARS AFTER COMMENCEMENT OF REMEDIAL ACTION TO INSURE THAT THE REMEDY CONTINUES TO PROVIDE ADEQUATE PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT.

SITE LOCATION AND DESCRIPTION

THE NATIONAL STARCH AND CHEMICAL COMPANY (NSCC) SITE IS LOCATED IN ROWAN COUNTY, NORTH CAROLINA, APPROXIMATELY FIVE MILES SOUTH OF THE CITY OF SALISBURY (FIGURE 1). SALISBURY IS LOCATED ABOUT 40 MILES NORTHEAST OF CHARLOTTE, NORTH CAROLINA.

THE NSCC SITE, ALSO REFERRED TO AS THE CEDAR SPRINGS ROAD PLANT, IS APPROXIMATELY 465 ACRES IN SIZE. THE DISPOSAL AREA, KNOWN AS THE TRENCH AREA, IS SURROUNDED BY HEAVILY WOODED ACREAGE TO THE NORTH, WEST, AND SOUTH. THE CHEMICAL PLANT IS LOCATED IN THE EASTERN PORTION OF THE SITE PROPERTY. RESIDENTIAL AREAS ARE LOCATED NO LESS THAN 1500 FEET FROM THE TRENCH AREA IN THE NORTHWEST AND SOUTHWEST DIRECTIONS.

LAND USE OF THE AREA IMMEDIATELY ADJACENT TO THE SITE CONSISTS OF A MIXTURE OF RESIDENTIAL AND INDUSTRIAL DEVELOPMENTS (FIGURE 2). ACCORDING TO 1986 STATISTICS, ROWAN COUNTY COVERS 517 SQUARE MILES IN AREA AND HAS A POPULATION OF 104,678. THE POPULATION OF THE CITY OF SALISBURY WAS 23,931 AS OF 1986. GROUNDWATER IS THE SOURCE OF DRINKING WATER SUPPLIES FOR THE COMMUNITY; THE CITY OF SALISBURY SUPPLIES RESIDENTS LOCATED TO THE NORTH, EAST, AND SOUTH OF THE SITE. OTHER NEARBY RESIDENTS ARE SUPPLIED BY SMALL COMMUNITY WELLS.

SEVERAL UNNAMED TRIBUTARIES TRAVERSE THE SITE AND FLOW INTO THE GRANTS CREEK SYSTEM. ONE TRIBUTARY FLOWS ALONG THE FRONT OF THE PLANT PARALLELING CEDAR SPRINGS ROAD AND LEAVES THE PROPERTY TO THE NORTH. A SMALL INTERMITTENT STREAM FORMS THE SOUTHWESTERN SITE BOUNDARY. A THIRD SMALL STREAM IS INDICATED ON THE USGS QUADRANGLE MAP IN THE NORTHWEST QUADRANT OF THE SITE. GRANTS CREEK FORMS THE WESTERN BOUNDARY OF THE PROPERTY AND CONTINUES FLOWING IN A NORTHERLY DIRECTION.

THERE IS NO DESIGNATED NORTH CAROLINA STATE SIGNIFICANT HABITAT, AGRICULTURAL LAND, OR HISTORIC LANDMARK SITE POTENTIALLY OR DIRECTLY AFFECTED BY THE SITE. THERE ARE NO ENDANGERED SPECIES OR CRITICAL HABITATS WITHIN PROXIMITY OF THE SITE. THERE ARE NO IDENTIFIED COASTAL OR FRESH-WATER WETLANDS WITHIN AN AREA OF INFLUENCE OF THE SITE.

THE GEOLOGIC FRAMEWORK OF ROWAN COUNTY FORMS TWO DISTINCT AQUIFERS. THE FIRST IS A SHALLOW AQUIFER CREATED BY THE SAPROLITE. THE SECOND IS A BEDROCK AQUIFER FORMED OF CRYSTALLINE ROCKS. THESE TWO AQUIFERS ARE INTERCONNECTED WITH CLAY-RICH SAPROLITE. WATER YIELDING PROPERTIES ARE VARIABLE. WELLS DRILLED WITHIN THE BEDROCK AQUIFER GENERALLY HAVE HIGHER YIELDS THAN THOSE IN

THE SAPROLITE AQUIFER AND AVERAGE APPROXIMATELY 40 TO 50 GALLONS PER MINUTE.

SITE HISTORY AND ENFORCEMENT ANALYSIS

THE NSCC SITE IS LOCATED ON THE OUTSKIRTS OF THE SALISBURY CITY LIMITS. EDWARD PROCTOR OF SALISBURY FOUNDED THE PROCTOR CHEMICAL COMPANY IN 1938. IN SEPTEMBER 1968, PROCTOR CHEMICAL COMPANY PURCHASED THE 465-ACRE CEDAR SPRINGS ROAD PROPERTY. WITHIN THE NEXT YEAR, PROCTOR CHEMICAL WAS ACQUIRED BY NATIONAL STARCH AND OPERATED AS A SEPARATE SUBSIDIARY. CONSTRUCTION OF THE CEDAR SPRINGS ROAD PLANT BEGAN IN 1970. ON JANUARY 1, 1983, PROCTOR CHEMICAL COMPANY WAS DISSOLVED AND ITS OPERATIONS MERGED WITH NATIONAL STARCH. THE NATIONAL STARCH FACILITY IS PRIMARILY A MANUFACTURING PLANT FOR TEXTILE FINISHING CHEMICALS AND CUSTOM SPECIALTY CHEMICALS.

FROM 1971 TO 1978, THE NSCC CONDUCTED ON SITE DISPOSAL OF APPROXIMATELY 350,000 GALLONS OF REACTION VESSEL WASH WATER INTO TRENCHES WHICH WERE REPORTED TO BE APPROXIMATELY 200 TO 300 FEET LONG AND 8 FEET DEEP. THE WASH WATER CONSISTED PREDOMINANTLY OF SALT BRINES, SULFURIC ACID SOLUTIONS, AND SOLVENTS AND IS CLASSIFIED AS D002 WASTE WITH CORROSIVE PROPERTIES AND A PH LESS THAN OR EQUAL TO 2. THESE TRENCHES WERE CONSTRUCTED WITHIN A 5-ACRE TRACT OF THE WESTERN SECTION OF THE SITE PROPERTY. THE TRENCH AREA IS SHOWN ON FIGURE 3.

LIQUID EFFLUENT FROM THE PLANT PRODUCTION AREA FLOWED INTO THE EASTERNMOST PRETREATMENT HOLDING LAGOON, WHICH WAS UNLINED, AND THEN WAS PUMPED TO AN ACTIVE TRENCH IN THE TRENCH AREA. EACH TRENCH WAS USED UNTIL LIQUID NO LONGER READILY PERCOLATED INTO THE GROUND. AT THAT TIME, THE TRENCH WAS BACKFILLED AND SEEDED, AND A NEW TRENCH WAS CONSTRUCTED.

IN 1976, NSCC INSTALLED EIGHT MONITORING WELLS AROUND THE SITE TO DETERMINE IF THE TRENCHING OPERATIONS HAD IMPACTED GROUNDWATER QUALITY. FOUR OF THESE MONITORING WELLS WERE INSTALLED ADJACENT TO OR WITHIN THE TRENCH AREA. SAMPLING RESULTS REVEALED THAT SHALLOW GROUNDWATER IMMEDIATELY WITHIN AND ADJACENT TO THE TRENCH AREA WAS CONTAMINATED. IN JUNE 1977, SAMPLING AND ANALYSIS CONDUCTED BY THE STATE OF NORTH CAROLINA VERIFIED NSCC'S RESULTS. THE STATE SUBSEQUENTLY REQUESTED THAT NSCC CEASE ON SITE WASTE DISPOSAL IN THE TRENCH AREA.

THE NSCC SITE WAS PROPOSED FOR INCLUSION ON THE NATIONAL PRIORITIES LIST (NPL) IN APRIL 1985 WITH EPA ASSUMING LEAD RESPONSIBILITY FOR THE SITE. NEGOTIATIONS TO ALLOW NSCC TO CONDUCT THE REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS) ACTIVITIES WERE CONCLUDED WITH THE SIGNATURE OF AN ADMINISTRATIVE ORDER ON CONSENT ON DECEMBER 1, 1986. THESE ACTIVITIES RESULTED IN THE ISSUANCE OF THE FIRST RECORD OF DECISION (ROD) DURING SEPTEMBER 1988.

THE FIRST ROD ADDRESSED GROUNDWATER REMEDIATION AT THE SITE UNDER OPERABLE UNIT 1. THE ROD SPECIFIED THAT SOIL CONTAMINATION IN THE TRENCH AREA BE FURTHER INVESTIGATED TO DETERMINE WHETHER THE AREA CONTINUED TO BE A MAJOR SOURCE OF GROUNDWATER CONTAMINATION. THE FIRST ROD ALSO REQUIRED THAT ANALYTICAL MONITORING CONTINUE ON CONTAMINATED SURFACE WATER AND SEDIMENTS TO FURTHER DELINEATE THE SOURCE.

THE FINAL REMEDIAL DESIGN FOR GROUNDWATER REMEDIATION UNDER OPERABLE UNIT 1 HAS BEEN APPROVED BY EPA. CONSTRUCTION BEGAN IN AUGUST 1990 WHICH CONSTITUTES THE INITIAL REMEDIAL ACTION (RA).

AT EPA'S DIRECTION, A SUPPLEMENTAL RI/FS WAS CONDUCTED FOR OPERABLE UNIT 2. THE TRENCH AREA WAS THE FOCAL POINT OF THE INVESTIGATION. SUBSURFACE SOILS WERE SAMPLED FROM TEN BOREHOLES DRILLED IN THE TRENCH AREA. THE BOREHOLES WERE CONTINUOUSLY SAMPLED USING SPLIT SPOONS, BEGINNING AT THE SURFACE AND EXTENDING TO A DEPTH OF 30 FEET OR TO THE SATURATED ZONE, WHICHEVER WAS ENCOUNTERED FIRST. FIELD SCREENING WAS CONDUCTED IN THE FINAL SELECTION OF THE SAMPLES SUBMITTED FOR LABORATORY ANALYSIS. IN ADDITION, TOXICITY CHARACTERISTICS LEACHING PROCEDURE (TCLP) ANALYSES WERE CONDUCTED ON SEVERAL BOREHOLE SAMPLES USING BOTH A STANDARD AND A RAINWATER SOLUTION

(COLLECTED IN THE TRENCH) TO DETERMINE CERTAIN SITE-SPECIFIC LEACHABILITY CHARACTERISTICS OF THE SOILS.

THE SUPPLEMENTAL RI ALSO INCLUDED ADDITIONAL MONITORING OF THE SURFACE WATER AND SEDIMENTS IN WHAT IS KNOWN AS THE NORTHEAST TRIBUTARY. THIS TRIBUTARY WAS SAMPLED IN OCTOBER AND NOVEMBER OF 1989 AND AGAIN IN JULY OF 1990. RESULTS OF THIS TRIBUTARY SAMPLING CONFIRMED SURFACE WATER AND SEDIMENT CONTAMINATION. THEREFORE, THE NORTHEAST TRIBUTARY WILL BE ADDRESSED UNDER A THIRD OPERABLE UNIT.

THIS DECISION DOCUMENT PRESENTS THE REMEDIAL SELECTION FOR THE RESIDUAL SOIL CONTAMINATION IN THE TRENCH AREA AT THE NSCC SITE.

COMMUNITY RELATIONS ACTIVITIES

EPA'S COMMUNITY RELATION EFFORTS FOR THE NSCC HAVE BEEN ONGOING SINCE 1986. COMMUNICATION WITH THE COMMUNITY HAS INCLUDED THE DEVELOPMENT OF SEVERAL SITE SPECIFIC FACT SHEETS AS WELL AS FOUR PUBLIC MEETINGS TO DATE. SPECIFICALLY FOR OPERABLE UNIT 2, THE SUPPLEMENTAL RI/FS AND PROPOSED PLAN FACT SHEET WERE DISTRIBUTED TO THE PUBLIC DURING JULY 1990. THE SECOND OPERABLE UNIT ADMINISTRATIVE RECORD WAS MADE AVAILABLE AT THE ROWAN COUNTY LIBRARY DURING THE PUBLIC COMMENT PERIOD. PUBLIC COMMENT WAS HELD FROM JULY 30, 1990 TO AUGUST 29, 1990.

ALL COMMENTS MADE TO THE AGENCY CONCERNING THE PROPOSED PLAN AND THE SITE IN GENERAL HAVE BEEN COMPILED AND ADDRESSED IN THE RESPONSIVENESS SUMMARY WHICH IS ATTACHED TO THIS RECORD OF DECISION AS APPENDIX A.

SCOPE AND ROLE OF OPERABLE UNIT 2 RESPONSE ACTION

THE SCOPE OF THIS RESPONSE ACTION IS TO ADDRESS ANY SOIL CONTAMINATION IN THE TRENCH AREA AS A SOURCE CONTROL OPERABLE UNIT. THE FIRST OPERABLE UNIT ACTION WAS DECIDED WITH THE ISSUANCE OF A ROD ON SEPTEMBER 30, 1988. THIS ROD REQUIRED THE DEVELOPMENT OF A GROUNDWATER INTERCEPTION AND EXTRACTION SYSTEM TO BE INSTALLED DOWN GRADIENT OF THE CONTAMINANT PLUME. PRETREATMENT FOR THE EXTRACTED GROUNDWATER INCLUDES AIR STRIPPING, FILTRATION THROUGH ACTIVATED CARBON, METALS REMOVAL, AND TREATMENT THROUGH THE COMPANY'S EXISTING LAGOON SYSTEM. DISCHARGE WILL BE TO THE SALISBURY PUBLICALLY OWNED TREATMENT WORKS (POTW). A CONTINGENCY FOR AN ALTERNATE DISCHARGE POINT WAS INCLUDED IN THE ROD IF PERMIT REQUIREMENTS FOR THE POTW CANNOT BE MET. MONITORING OF THE SURFACE WATERS ON THE SITE ARE ALSO REQUIRED UNDER THE FIRST ROD.

OBJECTIVES OF OPERABLE UNIT 2 ARE TO: ENSURE THAT CLEANUP STANDARDS FOR THE SITE ARE DEVELOPED FOR ALL APPROPRIATE MEDIA, (I.E., SUBSURFACE SOILS AND GROUNDWATER), IMPLEMENT A CLEANUP ALTERNATIVE THAT IS PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT, AND SELECT A REMEDY THAT MEETS THE ABOVE CRITERIA IN A COST EFFECTIVE MANNER.

SITE CHARACTERISTICS

THE NSCC SITE WAS CHARACTERIZED DURING THE INITIAL RI/FS UNDER A COMPREHENSIVE SITE-WIDE INVESTIGATION. BASED ON THE RESULTS OF THIS INITIAL RI, THE TRENCH AREA WAS DETERMINED TO BE THE ONLY SIGNIFICANT AREA FROM PAST DISPOSAL PRACTICES THAT COULD BE CONSIDERED A REMAINING SOURCE AREA TO GROUNDWATER CONTAMINATION. THE FIRST ROD REQUIRED THAT THE TRENCH AREA BE FURTHER INVESTIGATED TO IDENTIFY THE DEGREE OF SOURCE CONTRIBUTION. THIS DECISION DOCUMENT IS LIMITED TO THE CHARACTERISTICS AS OBSERVED IN THE TRENCH AREA SOILS AND IS BASED ON THE SUPPLEMENTAL RI. THE TRENCH AREA IS NOT CONSIDERED THE SOURCE OF CONTAMINATION TO THE TRIBUTARY.

TRENCH AREA SOILS

THE SUPPLEMENTAL RI CHARACTERIZED THE TRENCH AREA SUBSURFACE SOILS WITH THE INSTALLATION OF 10 BOREHOLES. FIGURE 3 PROVIDES THE BOREHOLE LOCATIONS. RESULTS OF THE ORGANIC ANALYSIS ARE SHOWN ON TABLE 1. SIGNIFICANT LEVELS OF 1,2-DICHLOROETHANE, 2-BUTANONE, 1,2-DICHLOROPROPANE, 4-METHYL-2-PENTANONE, TOLUENE, ETHYLBENZENE AND XYLENES WERE IDENTIFIED IN THE TRENCH AREA SUBSURFACE SOILS. ANTIMONY AND ARSENIC WERE THE INORGANIC CONSTITUENTS IDENTIFIED AT ELEVATED LEVELS; THESE TWO CONTAMINANTS WERE DETECTED AT ELEVATED LEVELS IN ONLY ONE LOCATION. TABULATED INORGANIC DATA ARE PRESENTED IN TABLE 2.

BASED ON THE DATA DEVELOPED FROM BOTH THE INITIAL AND SUPPLEMENTAL RIS, THE SUBSURFACE SOIL CONTAMINATION HAS BEEN OBSERVED FROM 5 FEET BELOW LAND SURFACE DOWN TO THE WATER TABLE. THE TOP 5 FEET IS BELIEVED TO BE CLEAN SOIL WHICH WAS BACKFILLED INTO TRENCHES AS THEY WERE DEACTIVATED. MAXIMUM CONCENTRATIONS WERE OBSERVED APPROXIMATELY 18 FEET BELOW LAND SURFACE. THERE IS NO CURRENT COMPLETE ROUTE OF EXPOSURE SPECIFICALLY FROM THESE SOILS, I.E., NO DERMAL EXPOSURE POTENTIAL. MIGRATION PATHWAY IS ISOLATED TO LEACHING INTO THE GROUNDWATER.

THE TRENCH AREA IS KNOWN TO BE THE ORIGINAL SOURCE OF THE GROUNDWATER CONTAMINATION BASED ON HISTORICAL DISPOSAL PRACTICES. THE SUPPLEMENTAL RI WAS DESIGNED TO MEASURE THE EFFECTIVENESS OF THE NATURAL SOIL FLUSHING BY PERCOLATING RAINFALL THROUGH THE SOIL CONTAMINANTS AS WELL AS DETERMINING THE ACTUAL CONTAMINANT CONCENTRATIONS REMAINING IN THE TRENCH AREA SUBSURFACE SOILS. THE SUPPLEMENTAL RI WAS CONDUCTED TO CHARACTERIZE THE REMAINING CONTAMINATION IN THE SUBSURFACE SOILS IN THE TRENCH AREA SPECIFICALLY TO DETERMINE IF REMEDIATION OF THE SOILS WAS NECESSARY. RESULTS OF THE SUPPLEMENTAL RI INDICATE THAT THE NATURAL LEACHING PROCESS HAS RESULTED IN REDUCING THE LEVELS OF THE SOILS CONTAMINATION. THIS IS BASED ON THE MAGNITUDE OF THE CONTAMINATION CURRENTLY IN THE GROUNDWATER COMPARED TO THE RESIDUAL LEVELS OF THE CONTAMINATION LEFT IN THE SOIL. IN FACT, SEVERAL OF THE CONTAMINANTS OF CONCERN IDENTIFIED IN THE FIRST ROD WERE NOT DETECTED WITHIN THE TRENCH AREA SOILS DURING THE SUPPLEMENTAL RI FIELD WORK.

THE SUPPLEMENTAL RI DETERMINED THAT THE MOST NOTABLE CONTAMINANT CONCENTRATIONS OF TRENCH AREA SOILS WERE APPROXIMATELY 18 FEET BELOW THE LAND SURFACE AND WERE FOUND IN MUCH LOWER CONCENTRATIONS THAN EXPECTED. IT APPEARS THAT RESIDUAL SOIL CONTAMINATION IS EFFECTIVELY LEACHING INTO THE GROUNDWATER; SOIL CONCENTRATIONS ARE CONSEQUENTLY BEING REDUCED. ANY REMEDIAL ACTIONS INVOLVING REMOVAL OR TREATMENT OF THESE SUBSURFACE SOILS WILL INTRODUCE ADDITIONAL RISKS TO THE ENVIRONMENT OR HUMAN HEALTH, BY THE EXCAVATION OR CONSTRUCTION CONCERNS INHERENT TO ANY FURTHER ACTION.

TO SUPPORT THE POTENTIAL FOR NATURAL SOIL FLUSHING TO BE CONSIDERED AS A VIABLE REMEDIAL OPTION IN CONJUNCTION WITH THE GROUNDWATER EXTRACTION SYSTEM, TWO VADOSE ZONE MODELS WERE APPLIED TO THE STUDY DATA. THE FIRST OBJECTIVE WAS TO DETERMINE AN ACCEPTABLE CONCENTRATION OF A CONTAMINANT IN SOIL; THE SECOND OBJECTIVE WAS TO PREDICT THE TIME REQUIRED TO ACHIEVE THIS ACCEPTABLE CONCENTRATION. PRE-ESTABLISHED GROUNDWATER CLEANUP CRITERIA (OPERABLE UNIT 1 ROD, 1988), WERE CONSIDERED THE UPWARD LIMIT FOR CONTAMINANT CONCENTRATIONS IN GROUNDWATER. SOIL CONCENTRATIONS WERE THEN BACK-CALCULATED USING THE SOIL/WATER EQUILIBRIUM RELATIONSHIP. MODELING DATA AND INFORMATION ARE PROVIDED IN APPENDIX B.

THE MODELING APPROACH WAS BASED ON CONSERVATIVE ASSUMPTIONS AND WAS ALSO USED TO PREDICT THE LEACHATE CONCENTRATION OVER TIME. THE PARTITION COEFFICIENTS WERE CALCULATED BASED ON SITE-SPECIFIC RESULTS OF THE TCLP ANALYSIS. THE MODEL PREDICTS THAT MOST COMPOUNDS WILL LEACH INTO THE GROUNDWATER WITHIN 5 YEARS. 1,2-DICHLOROETHANE IS PREDICTED TO TAKE MUCH LONGER (APPROXIMATELY 22 YEARS). PRELIMINARY ESTIMATES SHOW THAT THE GROUNDWATER REMEDIATION EFFORT MAY TAKE 20 TO 30 YEARS BEFORE MEETING THE CLEANUP CRITERIA THROUGHOUT THE PLUME.

SURFACE WATER AND SEDIMENTS

SURFACE WATER/SEDIMENT SAMPLING WAS CONDUCTED DURING BOTH THE FIRST AND SUPPLEMENTAL RI. THE ACTUAL SOURCE OF THIS CONTAMINATION HAS NOT BEEN DETERMINED. IT HAS BEEN CONCLUDED THAT THE TRENCH AREA SOILS ARE NOT

THE SOURCE. THIS SECOND OPERABLE UNIT PRESENTS THE SELECTED REMEDY FOR THE TRENCH AREA SOILS.

CONTINUAL MONITORING OF THE SURFACE WATER SYSTEM, KNOWN AS THE NORTHEAST TRIBUTARY, IS REQUIRED BY THE FIRST ROD, UNTIL A SOURCE OF CONTAMINATION CAN BE DEFINED. FURTHER INVESTIGATION OF THIS SYSTEM WILL BE CONTINUED UNDER A THIRD OPERABLE UNIT TO ULTIMATELY SELECT AN APPROPRIATE REMEDY.

SUMMARY OF SITE RISKS

CERCLA DIRECTS THAT THE AGENCY MUST PROTECT HUMAN HEALTH AND THE ENVIRONMENT FROM CURRENT AND POTENTIAL EXPOSURE TO HAZARDOUS SUBSTANCES AT THE SITE. THE RISK ASSESSMENT CONDUCTED DURING THE INITIAL RI CONCLUDED THAT THE PRINCIPAL RISK PRESENTED FROM THE NSCC SITE WAS THE POTENTIAL FOR HUMAN CONSUMPTION OF CONTAMINATED GROUNDWATER. LIKEWISE, THE PRINCIPAL RISK POSED FROM THE TRENCH AREA SOILS IS ALSO THE POTENTIAL FOR HUMAN CONSUMPTION OF CONTAMINATED GROUNDWATER SINCE THE ONLY ROUTE OF MIGRATION OF AND/OR EXPOSURE TO THE CONTAMINATED SUBSURFACE SOILS IS INFILTRATION TO GROUNDWATER. THE FOLLOWING SECTION SUMMARIZES THE AGENCY'S FINDING CONCERNING THE RISKS FROM EXPOSURE TO GROUNDWATER RELATED TO THIS SITE AND DISCUSSES THE CONTAMINATED SOIL AS A SOURCE OF EXPOSURE.

CONTAMINANTS OF CONCERN

ELEVEN CARCINOGENS AND FOURTEEN NON-CARCINOGENS HAVE BEEN IDENTIFIED IN THE GROUNDWATER AT THIS SITE. THE TOXICITY, MOBILITY AND PERSISTENCE CHARACTERISTICS OF THESE SUBSTANCES AT THE SITE DO NOT WARRANT THE EXCLUSION OF ANY OF THESE SUBSTANCES FROM CONSIDERATION AS CHEMICALS OF CONCERN AT THE SITE. THE CONTAMINANTS OF CONCERN FOR GROUNDWATER AT THIS SITE ARE LISTED IN TABLE 3. THIS TABLE ALSO SHOWS THE HIGHEST CONCENTRATIONS OF THESE SUBSTANCES IN GROUNDWATER AND IN THE SOIL SAMPLES COLLECTED AT THE SITE. ALSO THE TCLP RESULTS FOR THE THREE SOIL SAMPLES COLLECTED AT THE 12 TO 18 FEET LEVEL ARE SHOWN. THE MAXIMUM CONCENTRATIONS FROM A RAINWATER AND STANDARD LEACHATE ARE SHOWN. THIS TABLE ALSO SHOWS THE HIGHEST CONCENTRATIONS OF THESE SUBSTANCES IN GROUNDWATER AND IN THE SOIL SAMPLES COLLECTED AT THE SITE. THE MAXIMUM CONCENTRATIONS FROM A RAINWATER AND STANDARD LEACHATE ARE SHOWN. THE RESULTS OF SAMPLING FROM THE SUPPLEMENTAL RI INDICATE LEVELS OF CONTAMINANTS OF CONCERN IN THE SOIL OF THE TRENCH AREA ARE OF MINIMAL SIGNIFICANCE RELATIVE TO THE CONCENTRATIONS CURRENTLY EXISTING IN GROUNDWATER. SINCE THE GROUNDWATER PUMP AND TREAT SYSTEM IS DESIGNED TO CAPTURE THE HIGHLY CONTAMINATED GROUNDWATER AS WELL AS LESSER CONTAMINATED GROUNDWATER ORIGINATING BY THE LEACHING OF RAINFALL THROUGH THE RESIDUAL SOILS IN THE TRENCH AREA, NO EXCAVATION OF THE SOURCE IS DEEMED NECESSARY. THEREFORE, NO CONTAMINANTS OF CONCERN WERE IDENTIFIED FOR SOIL.

EXPOSURE ASSESSMENT

GROUNDWATER IN THE AREA IS A CURRENT SOURCE OF DRINKING WATER; IT IS CLASSIFIED AS CLASS IIA BASED ON THE AGENCY'S GROUNDWATER CLASSIFICATION STRATEGY. A 1988 SURVEY OF EXISTING OFF-SITE WATER SUPPLY WELLS REVEALED A TOTAL OF 1,539 HOMES WITHIN A 3-MILE RADIUS OF THE SITE. THESE WELLS ARE OUTSIDE THE LIMITS OF THE CITY WATER LINES AND COULD POTENTIALLY USE THE GROUNDWATER FOR DRINKING AND OTHER DOMESTIC PURPOSES. THE CLOSEST WELL IS LOCATED 2,200 FEET NORTHEAST OF THE SITE.

IN DEVELOPING THE HYPOTHETICAL EXPOSURE SCENARIOS FOR GROUNDWATER AT THIS SITE, IT WAS ASSUMED THAT NEARBY RESIDENTS WOULD BE EXPOSED TO WATER CONTAMINATED AT THE HIGHEST CONCENTRATIONS FOUND ON SITE. THIS IS A REASONABLE ASSUMPTION BASED ON THE FACTS THAT RESIDENCES ARE LOCATED ALMOST DIRECTLY ALONG THE SITE BOUNDARIES IN THE DIRECTION OF APPARENT GROUNDWATER FLOW, AND BECAUSE

THE DATA INDICATE THAT THE GROUNDWATER PLUME IS ADVANCING RAPIDLY. THE POTENTIAL ROUTES OF HUMAN EXPOSURE RELATIVE TO THE GROUNDWATER INCLUDE WATER USED FOR DRINKING AND OTHER DOMESTIC PURPOSES.

CONTAMINANTS WERE IDENTIFIED IN SOIL SAMPLE TAKEN TO A DEPTH OF 30 FEET HOWEVER, A TRENCH-AREA SAMPLE TAKEN AT THE 0-2 FEET DEPTH SHOWED LOW LEVELS OF ONLY THREE ORGANIC CONTAMINANTS, I.E. METHYLENE CHLORIDE, ACETONE AND BIS(2-ETHYLHEXYL) PHTHALATE. THIS FINDING OF MINIMAL CONTAMINATION IS CONSISTENT WITH THE UNDERSTANDING THAT TRENCHED AREAS (8 FEET DEEP) HAD BEEN BACK FILLED WITH CLEAN SOIL. ONLY THE TOP 1 TO 2 FEET OF SURFACE SOIL IS CONSIDERED AS A DIRECT-EXPOSURE SOIL SOURCE. THEREFORE EXPOSURE THROUGH SOIL INGESTION, INHALATION AND DERMAL CONTACT COULD BE POSSIBLE TO THE THREE ORGANIC CONTAMINANTS. THE MORE EXTENSIVE CONTAMINATION OF THE SUBSURFACE SOIL WOULD BE OF CONCERN AS A SOURCE OF EXPOSURE THROUGH GROUNDWATER USE.

TOXICITY ASSESSMENT

CANCER POTENCY FACTORS (CPFS) HAVE BEEN DEVELOPED BY EPA'S CARCINOGENIC ASSESSMENT GROUP FOR ESTIMATING EXCESS LIFETIME CANCER RISKS ASSOCIATED WITH EXPOSURE TO POTENTIALLY CARCINOGENIC CHEMICALS. CPFS, WHICH ARE EXPRESSED IN UNITS OF (MG/KG/DAY)(-1), ARE MULTIPLIED BY THE ESTIMATED INTAKE OF A POTENTIAL CARCINOGEN, IN (MG/KG-DAY), TO PROVIDE AN UPPER-BOUND ESTIMATE OF THE EXCESS LIFETIME CANCER RISK ASSOCIATED WITH EXPOSURE AT THE INTAKE LEVEL. THE TERM "UPPER BOUND" REFLECTS THE CONSERVATIVE ESTIMATE OF THE RISKS CALCULATED FROM THE CPF. USE OF THIS APPROACH MAKES UNDERESTIMATION OF THE ACTUAL CANCER RISK HIGHLY UNLIKELY. CANCER POTENCY FACTORS ARE DERIVED FROM THE RESULTS OF HUMAN EPIDEMIOLOGICAL STUDIES OR CHRONIC ANIMAL BIOASSAYS TO WHICH ANIMAL-TO-HUMAN EXTRAPOLATION AND UNCERTAINTY FACTORS HAVE BEEN APPLIED. THE AGENCY CONSIDERS INDIVIDUAL EXCESS CANCER RISK FROM EXPOSURE TO CONTAMINANTS AT SUPERFUND SITE TO BE PROTECTIVE IF THEY FALL WITHIN A (10-4) TO (10-6) RANGE, I.E. 1:10,000 TO 1:1,000,000. THE (10-6) RISK LEVEL IS THE DESIRED LEVEL FOR SINGLE CARCINOGENS; THE SUM OF SITE UPPERBOUND CANCER RISK SHOULD NOT EXCEED (10-4).

REFERENCE DOSES (RFDS) HAVE BEEN DEVELOPED BY EPA FOR INDICATING THE POTENTIAL FOR ADVERSE HEALTH EFFECTS FROM EXPOSURE TO CHEMICALS EXHIBITING NONCARCINOGENIC EFFECT. RFDS, WHICH ARE EXPRESSED IN UNITS OF (MG/KG-DAY), ARE ESTIMATES OF LIFETIME DAILY EXPOSURE LEVELS FOR HUMANS, INCLUDING SENSITIVE INDIVIDUALS. ESTIMATED INTAKES OF CHEMICAL FROM ENVIRONMENTAL MEDIA (E.G., THE AMOUNT OF A CHEMICAL INGESTED FROM CONTAMINATED DRINKING WATER) CAN BE COMPARED TO THE RFD. RFDS ARE DERIVED FROM HUMAN EPIDEMIOLOGICAL STUDIES OR ANIMAL STUDIES TO WHICH UNCERTAINTY FACTORS HAVE BEEN APPLIED (E.G. TO ACCOUNT FOR THE USE OF ANIMAL DATA TO PREDICT EFFECTS ON HUMANS.) THESE UNCERTAINTY FACTORS HELP ENSURE THAT THE RFDS WILL NOT UNDERESTIMATE THE POTENTIAL FOR ADVERSE NONCARCINOGENIC EFFECTS TO OCCUR.

THE CPFS FOR THE 11 CARCINOGENS AND THE RFDS FOR THE 14 NON-CARCINOGENS SELECTED AS THE GROUNDWATER CONTAMINANTS OF CONCERN ARE SHOWN IN TABLES 4 AND 5.

RISK CHARACTERIZATION

EXCESS LIFETIME CANCER RISKS ARE DETERMINED BY MULTIPLYING THE INTAKE LEVEL WITH THE CANCER POTENCY FACTOR. THESE RISKS ARE PROBABILITIES THAT ARE GENERALLY EXPRESSED IN SCIENTIFIC NOTATION (E.G., $1 \times (10^{-6})$ OR (10^{-6})). AN EXCESS LIFETIME RISK OF $1 \times (10^{-6})$ INDICATES THAT, AS A PLAUSIBLE UPPER BOUND, AN INDIVIDUAL HAS A ONE IN A MILLION CHANCE OF DEVELOPING CANCER AS A RESULT OF SITE-RELATED EXPOSURE TO A CARCINOGEN OVER A 70-YEAR LIFETIME UNDER THE SPECIFIC EXPOSURE CONDITIONS AT A SITE.

POTENTIAL CONCERN FOR NONCARCINOGENIC EFFECTS OF A SINGLE CONTAMINANT IN A SINGLE MEDIUM IS EXPRESSED AS THE HAZARD QUOTIENT (HQ) (OR THE RATIO OF THE ESTIMATED INTAKE DERIVED FROM THE CONTAMINANT CONCENTRATION IN A GIVEN MEDIUM TO THE CONTAMINANT'S REFERENCE DOSE). BY ADDING THE

HQS FOR ALL CONTAMINANTS WITHIN A MEDIUM OR ACROSS ALL MEDIA TO WHICH A GIVEN POPULATION MAY REASONABLY BE EXPOSED, THE HAZARD INDEX (HI) CAN BE GENERATED. THE HI PROVIDES A USEFUL REFERENCE POINT FOR GAUGING THE POTENTIAL SIGNIFICANCE OF MULTIPLE CONTAMINANT EXPOSURES WITH A SINGLE MEDIUM OR ACROSS MEDIA.

THE CARCINOGENIC UPPER BOUND RISKS AND THE NON-CARCINOGENIC HAZARD INDEX VALUES FOR THE 25 GROUNDWATER CONTAMINANTS OF CONCERN ARE SHOWN IN TABLES 9 AND 10. THE RISK NUMBERS ARE BASED ON EXPOSURE TO THE MAXIMUM CONCENTRATIONS DETECTED FOR EACH CHEMICAL DURING THE RI INVESTIGATION. THE POTENTIAL RISK POSED BY THESE CHEMICALS FROM GROUND WATER CONTAMINATION IS BEING ADDRESSED IN THE REMEDY FOR OPERABLE UNIT ONE (OU#1). THE RISK SUMMARY OF THIS ROD FOR OPERABLE UNIT TWO HAS INCLUDED A DISCUSSION OF THE RISK FROM GROUNDWATER FOR TWO REASONS: (1) IT WAS NOT ADEQUATELY DISCUSSED IN THE ROD FOR OU #1 AND ITS INCLUSION HERE PROVIDES A MORE ACCESSIBLE RECORD AND (2) IT PROVIDES IMPORTANT BACKGROUND INFORMATION FOR THE NO-ACTION REMEDY PROPOSED FOR OU2, THE SOIL SOURCE.

THE DATA INDICATE THAT ALL REMAINING SITE CONTAMINANTS ARE IN THE SATURATED ZONE OR IN THE DEEP SOIL JUST ABOVE THE SURFICIAL AQUIFER. ALTHOUGH MINIMAL DATA WERE COLLECTED TO CONFIRM THIS ASSUMPTION, ALL SITE HISTORY INFORMATION INDICATE THAT NO CONTAMINATION EXISTS IN THE TOP 2 TO 5 FEET OF SOIL. THE THREE CONTAMINANTS DETECTED IN THE TOP 2 FEET OF SOIL DISCUSSED UNDER THE EXPOSURE ASSESSMENT SECTION WERE WELL BELOW LEVELS OF CONCERN. THEREFORE, THE DIRECT SOIL EXPOSURE PATHWAYS ARE NOT RELEVANT FOR THIS SITE.

GROUNDWATER CONTAMINATION FROM DEEP SOIL LEACHING APPEARS TO BE THE ONLY EXPOSURE PATHWAY TO REMAINING SITE CONTAMINANTS AND THIS PATHWAY IS BEING ADDRESSED UNDER OU #1. THE GROUNDWATER AND DEEP SOIL DATA INDICATE THAT THE PRIMARY CONTAMINANTS (VOLATILE AND SEMIVOLATILE COMPOUNDS) ARE MOVING INTO THE GROUNDWATER AND THAT MAXIMUM CONCENTRATIONS HAVE LIKELY ALREADY REACHED THE SURFICIAL AQUIFER. IT IS LIKELY THAT DISTURBANCE OF THE SOIL SOURCE OF THESE CONTAMINANTS COULD RESULT IN AN INCREASE HEALTH RISK BY CREATING NEW DIRECT EXPOSURE PATHWAYS TO WORKERS AND PERHAPS TO THE COMMUNITY. THEREFORE, A NO ACTION REMEDY IS BELIEVED TO BE THE COURSE THAT WOULD CREATE THE LEAST RISK FROM THE SOIL SOURCE WHILE THE REMEDY IDENTIFIED UNDER OU #1 ACHIEVES GROUNDWATER PROTECTION.

DESCRIPTION OF THE NO ACTION ALTERNATIVE

THE NO-ACTION ALTERNATIVE WOULD LEAVE CONTAMINATED SOILS IN PLACE. THIS WILL ALLOW FOR THE NATURALLY OCCURRING LEACHING OR CLEANING OF THE SOIL IN CONJUNCTION WITH GROUNDWATER REMEDIATION. LEACHATE FROM THE RESIDUAL SOIL CONTAMINATION WOULD BE EXTRACTED AND TREATED BY THE GROUNDWATER EXTRACTION SYSTEM. INFILTRATION TO GROUNDWATER IS THE ONLY ROUTE OF MIGRATION AND SUBSEQUENT EXPOSURE POTENTIAL.

A DEED RESTRICTION WOULD BE FILED IDENTIFYING THE AREAS OF CONTAMINATION. THE DEED RESTRICTION WILL PREVENT PROPERTY TRANSFERS TO UNINFORMED PURCHASERS AND WILL LIMIT FUTURE UTILIZATION OF THE PROPERTY. THESE RESTRICTIONS ARE EASILY IMPLEMENTED BY PROCESSING THE RESTRICTIONS THROUGH A LOCAL ATTORNEY AND THE ROWAN COUNTY OR CITY OF SALISBURY REGISTER OF DEEDS.

THE TRENCH DISPOSAL AREA ITSELF DOES NOT PRESENT A DIRECT HEALTH RISK. AS PREVIOUSLY STATED, THE RISK POSED IS THROUGH THE MIGRATION FROM SOILS INTO GROUNDWATER; SUBSEQUENT CONTAMINATED GROUNDWATER CONSUMPTION POSES THE PRINCIPAL SITE THREAT. THEREFORE, ACCESS RESTRICTION TO THIS AREA IS NOT REQUIRED. IT SHOULD BE NOTED THAT THE TRENCH AREA LIES WELL WITHIN THE NSCC PROPERTY.

THE PRIMARY CONCERN AT THE NSCC SITE IS GROUNDWATER CONTAMINATION. THE ONLY MANNER IN WHICH THE SOILS CONTAMINATION CAN MANIFEST ITSELF IS THROUGH LEACHING INTO THE GROUNDWATER SYSTEM. THE GROUNDWATER REMEDY WAS PRESENTED IN THE FIRST OPERABLE UNIT ROD IN 1988. THE GROUNDWATER PLUME IS

TO BE CONTROLLED AND TREATED TO PREVENT RELEASES OFF THE SITE PROPERTY; THEREFORE, ANY POTENTIAL EXPOSURE PATHWAY WILL BE MITIGATED. BY ALLOWING THE NATURAL ATTENUATION OF THE SOIL, CONTAMINATION (OVER TIME) WILL BE REDUCED BECAUSE OF BIODEGRADATION, LEACHING, AND VOLATILIZATION OF CONTAMINANTS.

ANY RESIDUAL CONTAMINANTS IN THE UNSATURATED ZONE WILL BE LEACHED NATURALLY BY PRECIPITATION INFILTRATION AND THEN CAPTURED WITHIN THE GROUNDWATER EXTRACTION SYSTEM FOR ULTIMATE TREATMENT AND DISPOSAL. CONTAMINANT TRANSPORT MODELING, AS PRESENTED IN THE SUPPLEMENTAL RI, PREDICTED THAT MOST COMPOUNDS WILL LEACH INTO THE GROUNDWATER WITHIN THE PROJECTED TIME FRAME FOR GROUNDWATER REMEDIATION, I.E. 20 TO 30 YEARS. THIS LEACHING PROCESS WILL ACTUALLY BE ENHANCED BY THE GROUNDWATER EXTRACTION SYSTEM. THIS ALTERNATIVE, IN CONJUNCTION WITH GROUNDWATER REMEDIATION, PROVIDES AN EFFECTIVE METHOD TO TREAT SOIL AND GROUNDWATER CONTAMINANTS.

ADDITIONAL REMEDIAL ALTERNATIVES ADDRESSING THE TRENCH AREA SOILS WERE DEVELOPED IN BOTH THE INITIAL AND SUPPLEMENTAL FSS. THESE DOCUMENTS AND ALL RELATIVE DATA ARE CONTAINED WITHIN THE ADMINISTRATIVE RECORD.

COSTING INFORMATION

THE CAPITAL COSTS ASSOCIATED WITH THE NO ACTION ALTERNATIVE ARE THE ATTORNEY FEES FOR PROCESSING THE DEED RESTRICTIONS. THE OPERATION AND MAINTENANCE COSTS ASSOCIATED WITH THIS ALTERNATIVE ARE FOR RESAMPLING AND EVALUATING THE REDUCTION OF CONTAMINANTS IN THE SOIL EVERY FIVE YEARS.

CAPITAL COSTS

DEED RESTRICTION, LAWYER FEES\$1,000

SUBTOTAL \$1,000

OPERATION AND MAINTENANCE COSTS

SOIL SAMPLING EVERY FIVE YEARS \$150,000
(30 YEARS, PRESENT WORTH)

SUBTOTAL \$150,000

PRESENT WORTH

PW =\$1,000 + \$150,000

PW =\$151,000

IN SUMMARY, THE TRENCH AREA SUBSURFACE SOIL HAS BEEN ADEQUATELY ADDRESSED TO CONCLUDE THAT THE CONTAMINANTS EXISTING IN THE SOIL WILL LEACH OVER TIME INTO PERCOLATING RAINFALL. THE LEACHATE WILL THEN BECOME CAPTURED BY THE GROUNDWATER EXTRACTION SYSTEM AND TREATED IN THE ON-SITE PRETREATMENT SYSTEM. A CONSERVATIVE MODELING APPROACH WAS USED TO PREDICT THE LEACHATE CONCENTRATION OVER TIME. THE PARTITION COEFFICIENTS WERE CALCULATED BASED ON SITE-SPECIFIC RESULTS OF LEACHATE (TCLP) ANALYSIS. ALSO, THE HIGHEST KNOWN CONCENTRATION OF EACH COMPOUND WAS USED IN THE MODEL TO ACCOUNT FOR UNCERTAINTIES IN THE DATA SET. EVEN WITH THIS CONSERVATIVE APPROACH, THE MODEL PREDICTS THAT MOST COMPOUNDS WILL LEACH INTO THE GROUNDWATER WITH 5 YEARS. 1,2-DICHLOROETHANE, (DCA), IS PREDICTED TO TAKE 22 YEARS BEFORE A SAFE LEVEL IS REACHED (IN GROUNDWATER).PRELIMINARY ESTIMATES SHOW THAT THE GROUNDWATER REMEDIATION EFFORT MAY TAKE 20 TO 30 YEARS BEFORE MEETING THE CLEANUP CRITERIA THROUGHOUT THE PLUME. THEREFORE, THE REMEDIAL ALTERNATIVE OF NATURAL SOIL FLUSHING (OR NO FURTHER ACTION) AS DESCRIBED IN THE ORIGINAL AND SUPPLEMENTAL FS IS THE RECOMMENDED APPROACH.

IN ADDITION, SOIL SAMPLES SHOULD BE COLLECTED FOR MONITORING PURPOSES NO LESS FREQUENTLY THAN EVERY 5 YEARS TO VERIFY THAT SOIL REMEDIATION IS PROGRESSING. AT A MINIMUM, ANALYSIS WILL CONSIST OF VOLATILE ORGANIC COMPOUNDS.

EXPLANATION OF SIGNIFICANT DIFFERENCES

THE SELECTED REMEDY AS PRESENTED IN THIS DECISION DOCUMENT HAS NO DIFFERENCES, SIGNIFICANT OR OTHERWISE, FROM THE PROPOSED PLAN.

RESPONSIVENESS SUMMARY

THE US ENVIRONMENTAL PROTECTION AGENCY (EPA) HELD A PUBLIC COMMENT PERIOD FROM JULY 30 THROUGH AUGUST 29, 1990 FOR INTERESTED PARTIES TO COMMENT ON THE REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS) RESULTS AND THE PROPOSED PLAN FOR OPERABLE UNIT 2 AT THE NATIONAL STARCH AND CHEMICAL CORPORATION SITE (NSCC SITE OR THE SITE) IN SALISBURY, NORTH CAROLINA.

THE PROPOSED PLAN, INCLUDED IN ATTACHMENT A OF THIS DOCUMENT, PROVIDES A SUMMARY OF THE SITE'S BACKGROUND INFORMATION LEADING UP TO THE PUBLIC COMMENT PERIOD. SPECIFICALLY, THE PROPOSED PLAN INCLUDES THE FOLLOWING SECTIONS: INTRODUCTION, SITE BACKGROUND, RESULTS OF THE SUPPLEMENTAL REMEDIAL INVESTIGATION, ENDANGERMENT ASSESSMENT, SCOPE AND OBJECTIVES OF THIS REMEDIAL ACTION, PUBLIC COMMENT PERIOD, EPA'S REVIEW OF PUBLIC COMMENTS, ADDITIONAL PUBLIC INFORMATION, DEVELOPMENT OF EPA'S PREFERRED ALTERNATIVE, SUMMARY OF REMEDIAL ALTERNATIVES, EPA'S RATIONALE FOR SOLICITING THE PREFERRED ALTERNATIVE AND GLOSSARY OF TERMS.

EPA HELD A PUBLIC MEETING AT 7:00 PM ON JULY 30, 1990 AT THE SALISBURY CIVIC CENTER IN SALISBURY, NORTH CAROLINA TO OUTLINE THE RI/FS AND DESCRIBE EPA'S PROPOSED REMEDIAL ALTERNATIVES FOR OPERABLE UNIT 2 (I.E., TRENCH AREA SOILS) AT THE NSCC SITE. ALL COMMENTS RECEIVED BY EPA DURING THE PUBLIC COMMENT PERIOD WILL BE CONSIDERED IN THE FINAL SELECTION OF A REMEDIAL ALTERNATIVE FOR THE AREAS OF CONTAMINATION AT THE NSCC SITE.

THE RESPONSIVENESS SUMMARY, REQUIRED BY THE SUPERFUND LAW, PROVIDES A SUMMARY OF CITIZENS' COMMENTS AND CONCERNS IDENTIFIED AND RECEIVED DURING THE PUBLIC COMMENT PERIOD, AND EPA'S RESPONSES TO THOSE COMMENTS AND CONCERNS.

THIS RESPONSIVENESS SUMMARY IS ORGANIZED INTO THE FOLLOWING SECTIONS AND ATTACHMENTS:

I. RESPONSIVENESS SUMMARY OVERVIEW. THIS SECTION OUTLINES THE PURPOSES OF THE PUBLIC COMMENT PERIOD AND THE RESPONSIVENESS SUMMARY. IT ALSO REFERENCES THE APPENDED BACKGROUND INFORMATION LEADING UP TO THE PUBLIC COMMENT PERIOD.

II. BACKGROUND ON COMMUNITY INVOLVEMENT AND CONCERNS. THIS SECTION PROVIDES A BRIEF HISTORY OF COMMUNITY CONCERNS AND INTEREST REGARDING THE NSCC SITE.

III. SUMMARY OF MAJOR QUESTIONS AND COMMENTS RECEIVED DURING THE PUBLIC MEETING AND EPA'S RESPONSES TO THESE COMMENTS. THIS SECTION SUMMARIZES THE ORAL COMMENTS RECEIVED BY EPA AT THE JULY 30, 1990 PUBLIC MEETING, AND PROVIDES EPA'S RESPONSES TO THESE COMMENTS.

IV. WRITTEN COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD AND EPA'S RESPONSES TO THESE COMMENTS. THIS SECTION CONTAINS THE ONE LETTER RECEIVED BY EPA CONTAINING WRITTEN COMMENTS, AS WELL AS EPA'S WRITTEN RESPONSE TO THAT LETTER.

ATTACHMENT A: ATTACHMENT A CONTAINS THE PROPOSED PLAN WHICH WAS DISTRIBUTED TO THE PUBLIC DURING THE PUBLIC MEETING HELD ON JULY 30, 1990 AND MAILED TO THE INFORMATION REPOSITORY AND THOSE INCLUDED ON THE MAILING LIST.

ATTACHMENT B: ATTACHMENT B INCLUDES THE SIGN IN SHEETS FROM THE PUBLIC MEETING HELD ON JULY 30, 1990 AT THE SALISBURY CIVIC CENTER, 315 SOUTH BOUNDARY STREET, SALISBURY, NORTH CAROLINA.

ATTACHMENT C: ATTACHMENT C INCLUDES NAMES, ADDRESSES AND PHONE NUMBERS OF THE INFORMATION REPOSITORY DESIGNATED FOR THE NSCC SITE.

ATTACHMENT D: ATTACHMENT D INCLUDES THE OFFICIAL TRANSCRIPT OF THE PUBLIC HEARING ON THE PROPOSED PLAN FOR THE CLEANUP OF THE NSCC SITE LOCATED IN SALISBURY, NORTH CAROLINA.

II. BACKGROUND ON COMMUNITY INVOLVEMENT AND CONCERNS

A. BACKGROUND ON COMMUNITY INVOLVEMENT

AWARENESS OF AND CONCERN ABOUT THE NATIONAL STARCH PLANT ARE VERY HIGH IN THE COMMUNITIES WHICH ARE ADJACENT TO AND NEARBY THE SITE. NATIONAL STARCH HAS RECEIVED CONSIDERABLE LOCAL MEDIA ATTENTION, PRIMARILY IN THE SALISBURY POST (FORMERLY THE SALISBURY EVENING POST). IN THE 1960S AND 1970S, PROCTOR CHEMICAL (LATER ACQUIRED BY NATIONAL STARCH) EXPERIENCED INCIDENTS OF ESCAPING VAPOR CLOUDS AND CHEMICAL SPILLS AT THE LUMBER STREET PLANT. TWO SUCH INCIDENTS WERE REPORTED IN THE SALISBURY POST IN APRIL AND OCTOBER, 1979. IN BOTH INCIDENTS, A VAPOR CLOUD ESCAPED FROM THE PLANT WHEN A PIECE OF EQUIPMENT MALFUNCTIONED. CHEMICAL SPILLS AND EQUIPMENT MALFUNCTIONS WERE ALSO REPORTED IN MARCH AND APRIL 1980 FOR THE CEDAR SPRINGS ROAD PLANT, THE LOCATION OF THE SUPERFUND SITE.

THE SALISBURY POST REPORTED IN 1982 THAT THREE ROWAN COUNTY FIRMS, INCLUDING PROCTOR CHEMICAL ON CEDAR SPRINGS ROAD, WERE INCLUDED IN A LIST OF 174 SITES IN NORTH CAROLINA THAT MAY CONTAIN HAZARDOUS WASTES. PROCTOR CHEMICAL SAFETY DIRECTOR, LANE BROWN, WAS QUOTED IN THE SALISBURY POST ARTICLE AS STATING THAT ABOUT 350,000 GALLONS OF WASTE MATERIAL FROM THE PRODUCTION OF TEXTILE PRODUCTS WERE STORED IN EVAPORATION LAGOONS AND TRENCHES BETWEEN 1971 AND 1978.

THE SINGLE EVENT WHICH WAS MOST SIGNIFICANT IN HEIGHTENING COMMUNITY AWARENESS ABOUT NATIONAL STARCH WAS THE EXPLOSION THAT OCCURRED AT THE FIRM'S LUMBER STREET PLANT ON SEPTEMBER 21, 1983. THE EXPLOSION DESTROYED A SECTION OF THE PLANT, INJURED FOUR EMPLOYEES AND 14 FIREMEN, SENT DEBRIS OVER A FOUR BLOCK AREA, AND REQUIRED 75 FAMILIES TO BE EVACUATED FROM THE AREA FOR A SHORT TIME. THIS INCIDENT RECEIVED NATIONAL MEDIA ATTENTION. IN THE AFTERMATH OF THE EXPLOSION, RESIDENTS IN THE NEARBY NEIGHBORHOODS URGED THAT NATIONAL STARCH MOVE THE POTENTIALLY EXPLOSIVE MIXING OPERATIONS TO ITS CEDAR SPRINGS ROAD PLANT. EVEN THOUGH NATIONAL STARCH RESPONDED QUICKLY TO CLEANUP AND REPAIR DAMAGE TO SURROUNDING HOMES, A PETITION WAS CIRCULATED URGING NATIONAL STARCH TO MOVE THEIR OPERATIONS TO THE CEDAR SPRINGS ROAD PLANT. AN ARTICLE IN THE SALISBURY POST ON OCTOBER 4, 1983, INDICATED THAT THE PETITION HAD BEEN SIGNED BY 166 PEOPLE.

IN NOVEMBER, 1983, THE SALISBURY POST REPORTED THAT THE MOORESVILLE OFFICE OF THE NORTH CAROLINA DIVISION OF ENVIRONMENTAL PROTECTION WAS INVESTIGATING COMPLAINTS OF UNPLEASANT ODORS FROM NEIGHBORHOODS IN THE VICINITY OF THE CEDAR SPRINGS ROAD PLANT. THE RESIDENTS OF KINGS FOREST AND STONYBROOK COMPLAINED THAT THE PLANT WAS EMITTING ODORS WHICH WERE BAD SMELLING AND IRRITATING TO THE EYES. NO ODORS WERE FOUND AND THE RESIDENTS WERE TOLD THAT EVEN IF THE PLANT WERE EMITTING ODORS IT WOULD BE DIFFICULT TO ENFORCE NORTH CAROLINA'S AIR POLLUTION CONTROL REGULATION IN THIS INSTANCE.

ON AUGUST 16, 1984, A PRODUCTION PROCESS AT THE CEDAR SPRINGS ROAD PLANT BOILED OVER, RELEASING A VAPOR CLOUD CONTAINING ACETIC ACID. THE VAPOR CLOUD EFFECTED VEGETATION UP TO 1.5 MILES FROM THE PLANT IN A NORTHEASTERLY DIRECTION. NATIONAL STARCH WAS FINED A TOTAL OF \$10,000 ON FEBRUARY 11, 1985, BY THE NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT, DIVISION OF ENVIRONMENTAL MANAGEMENT, FOR THE UNLAWFUL DISCHARGE OF A HAZARDOUS SUBSTANCE AND FOR FAILING TO IMMEDIATELY REPORT THE DISCHARGE TO THE DEPARTMENT. AS REPORTED IN THE SALISBURY

POST, THIS RELEASE ANGERED RESIDENTS IN THE NEARBY TRAILER CITY MOBILE HOME PARK. RESIDENTS COMPLAINED OF BREATHING PROBLEMS AND PEELING PAINT ON TRUCKS AND MOBILE HOMES. RESIDENTS WERE ALSO REPORTED TO EXPRESS CONCERN ABOUT THE SECRECY WHICH SURROUNDS THE PLANT AND LACK OF RESPONSE BY NATIONAL STARCH'S INSURANCE COMPANY ADJUSTERS. OTHER RESIDENTS WERE WORRIED ABOUT EFFECTS ON CHILDREN AND NOT BEING ABLE TO OPEN DOORS OR WINDOWS OR RUN AIR CONDITIONERS FOR FEAR THAT THE BAD AIR WOULD BE DRAWN INTO THEIR HOMES. A LOCAL RESIDENT HAS FILED A \$2.5 MILLION LAWSUIT AGAINST NATIONAL STARCH FROM THIS INCIDENT, CHARGING THAT THE RELEASE DAMAGED PERSONAL PROPERTY AND THAT PERSONAL INJURY OCCURRED.

IN A SEPTEMBER 7, 1984 SALISBURY POST ARTICLE A LOCAL DOCTOR WAS REPORTED TO HAVE DIAGNOSED BETWEEN FIVE AND TEN CASES OF CHEMICAL BRONCHITIS AS A RESULT OF THE AUGUST 16, 1984 VAPOR CLOUD RELEASE FROM THE NATIONAL STARCH CEDAR SPRINGS ROAD PLANT. THE DOCTOR AND A NORTH CAROLINA DEPARTMENT OF HUMAN RESOURCES TOXICOLOGIST WERE QUOTED AS STATING THAT THEIR INVESTIGATIONS ON HEALTH EFFECTS WERE HAMPERED BY NATIONAL STARCH'S REFUSAL TO PROVIDE PROPORTIONS OF THE MIX THAT RESULTED IN THE VAPOR CLOUD RELEASE. ACCORDING TO THE SALISBURY POST, NATIONAL STARCH OFFICIALS WERE UNAVAILABLE FOR COMMENT.

AN ARTICLE APPEARING IN THE THURSDAY, SEPTEMBER 6, 1984 EDITION OF THE SALISBURY POST REPORTED THAT THREE OF THE MONITORING WELLS ON THE NATIONAL STARCH SITE WERE CONTAMINATED WITH UNKNOWN POLLUTANTS. THE NORTH CAROLINA DIVISION OF ENVIRONMENTAL MANAGEMENT WAS REPORTED AS HAVING TO RELY ON NATIONAL STARCH TO IDENTIFY THE SUBSTANCES FOUND IN THE WATER SAMPLES. THE ARTICLE ALSO REFERRED TO TESTS CONDUCTED AT A PRIVATE WELL IN THE LITTLE ACRES MOBILE HOME SUBDIVISION IN MARCH 1984 IN WHICH A NUMBER OF CONTAMINANTS HAD BEEN DISCOVERED. SUBSEQUENT TESTING OF THE WELL IN JUNE 1984 FOUND NO CONTAMINANTS, LEADING OFFICIALS TO BELIEVE THAT THE MARCH SAMPLES HAD BEEN CONTAMINATED IN THE LABORATORY.

IN OCTOBER 1984, AN ARTICLE APPEARING IN THE SALISBURY POST CITED FORMER AND CURRENT CITY EMPLOYEES' ACCOUNTS THAT NATIONAL STARCH BURIED LIQUID WASTE FROM ITS LUMBER STREET PLANT AT THE CITY OF SALISBURY'S TOWN CREEK AND GRANTS CREEK WASTEWATER TREATMENT PLANTS. THE EMPLOYEES WERE NOT SURE HOW MUCH HAD BEEN DUMPED OR HOW LONG THE DUMPING LASTED, BUT THOUGHT THE DUMPING OCCURRED AS EARLY AS 1967 TO 1971. METAL 55-GALLON DRUMS WERE ALSO SAID TO HAVE BEEN BURIED AT THE CITY SITES. CITY OFFICIALS WERE QUOTED AS SAYING THEY DID NOT BELIEVE THE DUMPING HAD OCCURRED. NATIONAL STARCH OFFICIALS ADMITTED THAT A DUMP EXISTED AT ITS CEDAR SPRINGS ROAD PLANT SITE BUT NOT AT ANY OTHER LOCATION. SUBSEQUENT SEARCHING OF THE TWO TREATMENT PLANT SITES BY BOTH STATE AND CITY AGENCY PERSONNEL FOUND NO EVIDENCE OF BURIED WASTES.

IN MARCH, 1985, THE NATIONAL STARCH SITE WAS SELECTED FOR INCLUSION ON THE PROPOSED EXPANSION OF THE NATIONAL PRIORITIES LIST. THE HAZARD RANKING SYSTEM (HRS) SCORE WAS 31.9. THE DECISION TO INCLUDE THE SITE ON THE PROPOSED LIST WAS PUBLISHED ON APRIL 10, 1985, IN THE FEDERAL REGISTER. AN ARTICLE TITLED "NATIONAL STARCH: THE NEIGHBOR'S VIEWS" APPEARED IN THE SALISBURY POST ON APRIL 1, 1985. THE ARTICLE DESCRIBED MIXED FEELINGS IN THE COMMUNITIES NEAR THE PLANT. SOME OF THE RESIDENTS WITHIN KINGS FOREST SUBDIVISION BELIEVED THAT NATIONAL STARCH WAS A RESPONSIBLE COMPANY WITH AN EXCELLENT RECORD, AND THAT NATIONAL STARCH WOULD WORK WITH THE EPA AND CLEANUP THE DUMP. RESIDENTS OF TRAILER CITY WERE CONCERNED ABOUT THE EFFECTS ON THEIR HEALTH AND BELIEVED THEIR COMMUNITY HAD BORNE THE BRUNT OF LIVING NEAR NATIONAL STARCH. THE ARTICLE REPORTED THAT, AT LEAST ONCE PER WEEK, ODORS DESCRIBED AS EVERYTHING FROM ROTTEN EGGS TO FISH, DRIFTED THROUGH THE PARK, FORCING RESIDENTS INSIDE THEIR MOBILE HOMES. SOME RESIDENTS WERE REPORTED AS BEING READY TO MOVE BUT DON'T KNOW WHERE TO MOVE.

THE LEAD STORY IN THE SALISBURY POST ON AUGUST 21, 1985, WAS ABOUT A CHEMICAL EXPLOSION WHICH INJURED TWO WORKERS AT THE NATIONAL STARCH CEDAR SPRINGS ROAD PLANT. THE EXPLOSION OCCURRED AS A PILOT-SCALE MANUFACTURING PROCESS WAS BEING CONDUCTED. NO HAZARDOUS RUNOFF OR EMISSIONS RESULTED FROM THE INCIDENT.

A LOCAL CITIZENS GROUP, CITIZENS FOR A SAFE ENVIRONMENT (CASE), WAS ORGANIZED IN AUGUST 1985, AFTER THE CLEAN WATER FUND OF NORTH CAROLINA APPROACHED COMMUNITY MEMBERS WHO HAD EXPRESSED CONCERNS ABOUT THE SITE AND OFFERED TO HELP THEM START A CITIZENS GROUP. IN A LETTER TO THE EDITOR OF THE SALISBURY POST PUBLISHED ON SEPTEMBER 17, 1985, A SPOKESPERSON FOR THE GROUP STATED THAT THE OBJECTIVES OF THE GROUP ARE TO: 1) DETERMINE THE CURRENT SURFACE AND WELL (AQUIFER) WATER QUALITY SURROUNDING THE NATIONAL STARCH CEDAR SPRINGS ROAD PLANT; 2) GET THE DUMP SITE CLEANED UP EFFECTIVELY AND PROMPTLY; 3) EXPRESS CONCERN OVER NATIONAL STARCH'S RECENT SAFETY RECORD; 4) ENCOURAGE NATIONAL STARCH TO DISPLAY IMPROVED COMMUNICATIONS AND COMMUNITY RELATIONS; AND 5) DEVELOP LONG-RANGE ENVIRONMENTAL AWARENESS IN THE SOUTH ROWAN COUNTY AREA.

A PUBLIC MEETING WAS HELD ON SEPTEMBER 4, 1985. EPA OFFICIALS, NATIONAL STARCH REPRESENTATIVES, MEMBERS OF CASE, AND A REPRESENTATIVE OF THE CLEAN WATER FUND WERE IN ATTENDANCE, AS WELL AS ABOUT 60 RESIDENTS. THE SALISBURY POST REPORTED IN AN ARTICLE ABOUT THE MEETING THAT, "THE ASSURANCES BY HIGH RANKING NATIONAL STARCH OFFICIALS DID LITTLE TO DISSUADE THE FEARS OF THE 60 RESIDENTS" IN ATTENDANCE. RESIDENTS WERE QUOTED AS SAYING THAT NATIONAL STARCH WAS NOT SHOWING RESPONSIBLE SAFETY OR CITIZENSHIP TO THE COMMUNITY AND THAT NATIONAL STARCH HAD MADE THE AREA AROUND AIRPORT ROAD A BAD PLACE TO LIVE. NATIONAL STARCH REPRESENTATIVES WERE REPORTED AS HAVING MET REPEATEDLY WITH EPA OFFICIALS AND STATED THAT NATIONAL STARCH WILL CLEANUP THE DUMP IF THE SITE MAKES THE NPL. NATIONAL STARCH OFFICIALS ALSO AGREED TO MEET WITH THE CLEAN WATER FUND AND RESIDENTS TO ADDRESS RESIDENTS' DEMANDS.

FOLLOWING THE PUBLIC MEETING, HELD ON SEPTEMBER 4, 1985, CASE ORGANIZED A RALLY TO COINCIDE WITH THE PASSAGE OF A TRUCK CALLED THE TIMES BEACH BULLET THROUGH THE AREA, WHICH WAS CARRYING WASTE SAMPLES FROM SUPERFUND SITES IN BELMONT, MOUNT HOLLY AND SHELBY TO WASHINGTON, DC PARTICIPATING IN THE RALLY WERE REPRESENTATIVES OF THE SIERRA CLUB, NATIONAL CAMPAIGN AGAINST TOXIC HAZARDS, AND THE CLEAN WATER FUND OF NORTH CAROLINA. THE SALISBURY POST REPORTED THAT ABOUT 30 PEOPLE ATTENDED THE RALLY. A LOCAL RESIDENT WAS QUOTED THAT "A LOT OF PEOPLE ARE DISAPPOINTED WITH THE SEEMINGLY ENDLESS BUREAUCRATIC SNARLS THAT SEEM TO BE PART OF THIS GAME." A PETITION, CONTAINING 815 SIGNATURES OF RESIDENTS FROM SOUTHERN ROWAN COUNTY, ASKING THAT NATIONAL STARCH CLEAN UP THE SITE, WAS SENT ALONG WITH THE WASTE SAMPLES. IT WAS REPORTED THAT LOCAL AND STATE REPRESENTATIVES, CHARLOTTE GARDNER AND BRAD LIGON, ATTENDED THE RALLY TO DEMONSTRATE THEIR SUPPORT FOR CASE.

IN KEEPING WITH DISCUSSION HELD AT THE PUBLIC MEETING OF SEPTEMBER 4, 1985, NATIONAL STARCH ARRANGED FOR A GROUP OF CITIZENS TO TOUR THE NATIONAL STARCH CEDAR SPRINGS ROAD PLANT. A SYNOPSIS OF THE TOUR APPEARED IN THE SALISBURY POST ON OCTOBER 15, 1985. THE TOUR WAS REPORTED TO HAVE RECEIVED MIXED REVIEWS FROM CASE MEMBERS. SOME RESIDENTS STATED THEY FELT SAFER SINCE NATIONAL STARCH HAD TOLD THEM THINGS THEY HAD NOT BEEN TOLD BEFORE. OTHER RESIDENTS WERE NOT CONVINCED THAT THE TOXIC WASTE WOULD NOT GET INTO THEIR WATER IN THE FUTURE. NATIONAL STARCH DID NOT PROVIDE INFORMATION ABOUT THE SUBSTANCES USED AT THE PLANT, CLAIMING THAT SUCH INFORMATION WAS CONFIDENTIAL. THIS APPROACH LEFT SOME DOUBT IN THE MINDS OF SOME RESIDENTS. AT THE START OF THE TOUR, NATIONAL STARCH REFUSED TO INCLUDE A SALISBURY POST REPORTER AND A REPRESENTATIVE FROM THE CLEAN WATER FUND ON THE GROUNDS THAT THE TOUR WAS FOR SOUTHERN ROWAN COUNTY RESIDENTS ONLY. NATIONAL STARCH EVENTUALLY RELENTED AND THE CLEAN WATER FUND REPRESENTATIVE WAS ALLOWED TO TAKE PART IN THE TOUR, ALTHOUGH THE REPORTER WAS NOT.

IN APRIL 1986, NEIGHBORS AROUND THE NATIONAL STARCH CEDAR SPRINGS ROAD PLANT, PARTICULARLY THOSE RESIDING IN TRAILER CITY, COMPLAINED OF A STRONG ODOR THAT MADE THEIR EYES BURN AND CAUSED DIZZINESS. AS REPORTED IN THE SALISBURY POST ON APRIL 1, 1986, THE SALISBURY FIRE DEPARTMENT RECEIVED SEVERAL CALLS ABOUT AN ODOR AT APPROXIMATELY 7:15 PM ON MARCH 31, 1986. FIRE OFFICIALS COULD FIND NOTHING AT THE PLANT, WHICH HAD BEEN CLOSED FOR THE EASTER HOLIDAY. IN ANOTHER ARTICLE, FIRE FIGHTERS RESPONDED TO A CALL FROM A NEARBY RESIDENT WHO THOUGHT THAT AN EXPLOSION HAD OCCURRED AT THE LUMBER STREET PLANT. THE FIRE DEPARTMENT FOUND NOTHING, NO EXPLOSION, NO VAPOR CLOUD, AND NO FIRE.

THE FRONT PAGE STORY IN THE SALISBURY POST ON JUNE 25, 1986, REPORTED THAT A TOXIC CLOUD ESCAPED FROM A REACTOR VESSEL AT THE NATIONAL STARCH CEDAR SPRINGS ROAD PLANT. ACRYLIC ACID WAS RELEASED TO THE ATMOSPHERE WHEN A SAFETY RELIEF VALVE OPENED TO RELEASE THE PRESSURE THAT HAD BUILT UP IN THE REACTION VESSEL. THE SAFETY RELIEF VALVE WOULD NOT OPEN AND RELEASE CHEMICALS TO THE ATMOSPHERE UNDER NORMAL OPERATING CONDITIONS. IT IS DESIGNED TO OPEN ONLY WHEN POTENTIALLY EXPLOSIVE CONDITIONS EXIST, AS THEY DID AT THE TIME OF THE ACCIDENT. THE SALISBURY FIRE DEPARTMENT SEALED OFF CEDAR SPRINGS ROAD AT US HIGHWAY 601/BUS 29 AND AIRPORT ROAD. SOME NEARBY RESIDENTS REPORTED BURNING EYES, IRRITATED LUNGS, AND HEADACHES. RESIDENTS INTERVIEWED AFTER THE INCIDENT WERE QUOTED AS SAYING THAT IT WAS NOT SAFE AROUND THE PLANT. RESIDENTS ALSO COMPLAINED ABOUT ODORS DURING THE EVENING HOURS.

A REPRESENTATIVE OF CASE APPEARED BEFORE THE COUNTY COMMISSIONERS ON JULY 7, 1986. AN ACCOUNT OF THIS PRESENTATION APPEARED IN THE SALISBURY POST ON JULY 7, 1986. THE COMMISSION WAS ASKED TO STUDY WHAT COULD BE DONE TO IMPROVE SAFETY AND COMMUNICATIONS AT NATIONAL STARCH. AS A RESULT, THE COMMISSIONERS ASKED THAT THE COUNTY ATTORNEY LOOK INTO THE REQUEST TO DETERMINE WHAT THE COUNTY COULD DO. IT WAS REPORTED THAT CASE MEMBERS FACED A BUREAUCRATIC SNARL, A LACK OF SUPPORT FROM COUNTY OFFICIALS AND SECRECY FROM NATIONAL STARCH.

THE COMMUNITY HAD MAINTAINED A HIGH LEVEL OF AWARENESS AND CONCERN REGARDING NATIONAL STARCH AS A RESULT OF THE INCIDENTS REPORTED IN THE MEDIA. ACCORDING TO THE NATIONAL STARCH OPERATIONS MANAGER, NATIONAL STARCH HAS HAD TO CONTEND WITH MEDIA REPORTS THAT WERE, AT TIMES, EITHER LESS THAN FACTUAL, OR MISLEADING. THE LACK OF INFORMATION AND THE MANNER IN WHICH NATIONAL STARCH DEALT WITH SOME OF THE REPORTED INCIDENTS MAY HAVE CONTRIBUTED TO THE HEIGHTENED AWARENESS AND THE LACK OF CREDIBILITY THAT NATIONAL STARCH HAS WITHIN THE COMMUNITY. COMMUNITY AWARENESS APPEARS TO INCREASE, SOMETIMES UNNECESSARILY, EACH TIME NATIONAL STARCH HAS AN INCIDENT. AS DESCRIBED BY THE NATIONAL STARCH OPERATIONS MANAGER, THE CEDAR SPRINGS ROAD PLANT FIRE ALARM AT THE SALISBURY FIRE DEPARTMENT IS TIED INTO THE PLANT SPRINKLER SYSTEM, SOUNDING THE ALARM WHENEVER A WATER PRESSURE DROP IS SENSED, WHETHER OR NOT THE SPRINKLER SYSTEM HAS BEEN ACTIVATED. THE FIRE DEPARTMENT APPARENTLY RACES TO THE CEDAR SPRINGS ROAD PLANT, SEALING OFF AIRPORT ROAD AND US HIGHWAY 601/BUS 29 AT CEDAR SPRINGS ROAD AS A STANDARD PRECAUTION. ANY CITIZEN PASSING THESE POINTS WILL, GIVEN NATIONAL STARCH'S TRACK RECORD, IMMEDIATELY ASSUME THE WORST HAS OCCURRED, NAMELY AN EXPLOSION SIMILAR TO THE ONE WHICH OCCURRED AT THE LUMBER STREET PLANT OR A VAPOR CLOUD RELEASE AS OCCURRED IN 1984. WITHOUT THE RELEASE OF ADEQUATE INFORMATION, RUMORS GET STARTED AND WHAT MAY HAVE BEEN A FALSE ALARM BECOMES A SERIOUS INCIDENT IN THE EYES OF THE COMMUNITY.

RESIDENTS IN THE AREA ALSO TEND TO MONITOR FIRE AND POLICE SCANNER RADIOS. THEY HAVE OFTEN LISTENED TO IDLE CHATTER OR INDECISION AMONG FIREMEN, WHO WERE WAITING FOR DIRECTIONS FROM THE FIRE CHIEF OR PLANT OFFICIALS. THIS TOO, HAS ALLOWED FOR INACCURATE INFORMATION TO BE CIRCULATED THROUGH THE COMMUNITY. EACH CASE OR EXAMPLE CITED ABOVE, ALTHOUGH NOT DIRECTLY RELATED TO THE PROPOSED SUPERFUND EFFORT AT THE SITE, IS EVIDENCE OF THE COMMUNITY INVOLVEMENT WITH NATIONAL STARCH AND PROVIDES A BASIS FOR GETTING INFORMATION ABOUT THE SUPERFUND SITE TO THE COMMUNITY IN AN EFFECTIVE AND CREDIBLE MANNER.

B. COMMUNITY CONCERNS

DURING THE PUBLIC MEETING HELD ON SEPTEMBER 4, 1985, A NUMBER OF QUESTIONS AND DEMANDS WERE PRESENTED BY THE CITIZENS GROUP CASE. THE CONSENSUS OF A CROSS SECTION OF THE COMMUNITY INTERVIEWED IN PREPARING THIS COMMUNITY RELATIONS PLAN WAS THAT THESE QUESTIONS AND DEMANDS WERE NOT DIRECTLY ADDRESSED AT THE MEETING. INDIVIDUALS WHO ATTENDED THE MEETING SAID THAT SPEAKERS CONFUSED MANY OF THE RESIDENTS BY USING TECHNICAL TERMS THAT THE RESIDENTS DID NOT UNDERSTAND. IN LIGHT OF THE GENERAL CONCERN THAT OFFICIALS WERE NOT PAYING ATTENTION TO THE COMMUNITY MEMBERS, THE QUESTIONS AND DEMANDS PRESENTED BY CASE AT THE PUBLIC MEETING ARE SUMMARIZED BELOW:

QUESTIONS

- 1) WHAT HAS EPA FOUND OUT ABOUT THE GROUNDWATER ON THE NATIONAL STARCH SITE?
- 2) ARE THE CHEMICALS THAT ARE DEPOSITED IN THE TRENCHES HAZARDOUS TO OUR (RESIDENTS) HEALTH?
- 3) WILL SUPERFUND BE MORE INTERESTED IN THE SITE FOLLOWING THE FIELD INVESTIGATION?
- 4) IS THERE ANY EVIDENCE OF ILLEGAL DUMPING OF CHEMICALS AT THIS TIME?
- 5) HOW QUICKLY WILL CLEANUP PROCEDURES BEGIN, FOLLOWING THE FIELD INVESTIGATION?
- 6) WILL AN ALARM OR HORN BE REQUIRED FOR NATIONAL STARCH DURING EXPLOSIONS OR LEAKS? (PUBLIC USE)
- 7) WHAT ARE THE LONG-TERM EFFECTS ON HUMANS OF THE CHEMICALS DEPOSITED IN THE TRENCHES?
- 8) CONSIDERING THE NC DEPARTMENT OF AGRICULTURE, HARDEE'S FOOD DISTRIBUTION WAREHOUSE, AND 3 GUY'S GROCERY WAREHOUSE ARE NEAR THE NATIONAL STARCH SITE, IS THERE ANY POSSIBILITY OF CONTAMINATION OF PUBLIC FOOD?
- 9) WILL EPA SUGGEST OR REQUIRE NATIONAL STARCH TO FINANCE AND CONTROL ITS OWN FIRE DEPARTMENT ON ITS OWN PREMISES?
- 10) WILL EPA OFFICIALS BE MORE STRICT IN THE FUTURE ON CHEMICAL DUMPING AND HANDLING OF SUCH CHEMICALS ON THIS SITE?

DEMANDS

- 1) RESIDENTS' WELLS BE CHECKED IN IMMEDIATE AREA.
- 2) BETTER PUBLIC RELATIONS BETWEEN NATIONAL STARCH, NEIGHBORS AND SURROUNDING BUSINESSES.
- 3) A PUBLIC ALARM SYSTEM BY NATIONAL STARCH TO ALERT NEARBY BUSINESSES AND NEIGHBORS OF AN EXPLOSION OR CHEMICAL LEAK.
- 4) PERIODIC CHECKS BY A QUALIFIED SOURCE OF THE NATIONAL STARCH SITE TO PROHIBIT CHEMICAL VIOLATIONS. (PREFER SOME OUTSIDE SOURCE)
- 5) THE RIGHT TO PARTICIPATE FROM THE BEGINNING TO THE END OF THE SUPERFUND PROCESS.
- 6) TIMELY NOTIFICATION OF ALL STEPS IN THE SUPERFUND PROCESS BEFORE THEY ARE TAKEN, WITH REASONABLE TIME ALLOWED FOR COMMENTS AND RESPONSE.
- 7) PROGRESS REPORTS REGARDING ONSITE ACTIVITY WITH PROVISIONS FOR CITIZEN COMMENT.

MANY OF THESE SAME ISSUES AND CONCERNS WERE EXPRESSED DURING THE INTERVIEWS WITH LOCAL CITIZENS. THE COMMUNITY HAD MIXED OPINIONS REGARDING ODORS AND SAFETY PRACTICES EMPLOYED AT THE SITE, CONCERNS WHICH ARE NOT DIRECTLY RELATED TO THE SUPERFUND SITE. ALL OF THE RESIDENTS INTERVIEWED AGREED THAT IF NATIONAL STARCH (OR ITS PREDECESSOR, PROCTOR CHEMICAL) HAD DISPOSED OF HAZARDOUS WASTES ON THE SITE, NATIONAL STARCH SHOULD CLEAN UP THE SITE. GIVEN PREVIOUS INCIDENTS AT NATIONAL STARCH PLANTS IN SALISBURY AND THE MANNER IN WHICH NATIONAL STARCH HAS PROVIDED INFORMATION TO THE COMMUNITY, A MAJORITY OF THE COMMUNITY MEMBERS INTERVIEWED HAD LITTLE CONFIDENCE IN NATIONAL STARCH'S ABILITY TO CLEAN UP THE SITE OR PROVIDE ACCURATE INFORMATION TO

THE COMMUNITY. AS A RESULT, MANY PEOPLE STATED THAT THEY WOULD ONLY FEEL CONFIDENT IF A THIRD PARTY SUCH AS EPA WERE INVOLVED IN OVERSEEING NATIONAL STARCH EFFORTS AT THE SITE.

SOME OF THE SPECIFIC CONCERNS EXPRESSED BY RESIDENTS IN THE KINGS FOREST SUBDIVISION INCLUDED THE OBSERVATION THAT THE CREEKS BEHIND THEIR HOMES WHICH DRAINED THE NATIONAL STARCH SITE HAVE "FUNNY SMELLS" AND FREQUENTLY APPEAR TO HAVE OIL SLICKS. RESIDENTS ARE AFRAID TO LET THEIR CHILDREN PLAY IN THE CREEKS OR ON NATIONAL STARCH'S PROPERTY WHICH ADJOINS THEIR BACKYARDS. THE POSSIBLE EFFECTS OF THE SUPERFUND SITE ON PROPERTY VALUES WAS 8150 A FREQUENTLY MENTIONED CONCERN. ONE RESIDENT SUGGESTED THAT PROPERTY VALUES MAY HAVE BEEN AFFECTED MORE BY ARTICLES IN THE SALISBURY POST DEALING WITH NATIONAL STARCH'S PROBLEM THAN BY THE FACT THAT THE SUBDIVISION IS LOCATED ADJACENT TO A SUPERFUND SITE. SINCE THE KINGS FOREST SUBDIVISION IS ON CITY WATER, CONCERNS ABOUT GROUNDWATER CONTAMINATION WERE NOT AS IMPORTANT AS THE ODOR AND SITE ACCESS PROBLEMS, POTENTIAL FOR EXPLOSION, AND ACCIDENTAL RELEASES OF VAPOR CLOUDS. KINGS FOREST RESIDENTS CONSIDER THAT THEY WERE "LUCKY" THAT THE WIND WAS BLOWING IN THE OPPOSITE DIRECTION WHEN THE ACETIC ACID CLOUD WAS RELEASED IN 1984, BUT ARE WORRIED THAT NEXT TIME THEY MAY NOT BE SO LUCKY. MOST PEOPLE EXPRESSED DISAPPOINTMENT THAT THE ROWAN COUNTY OFFICIALS APPEAR TO BE UNWILLING TO HELP, TELLING RESIDENTS THAT IT WAS A CITY, RATHER THAN COUNTY, MATTER.

SEVERAL RESIDENTS REFERRED TO THE SEPTEMBER 4, 1985 PUBLIC MEETING, STATING THAT THEY HAD ANTICIPATED MORE DIRECT RESPONSE TO THEIR QUESTIONS AND CONCERNS THAN HAD BEEN PROVIDED AT THE MEETING. RESIDENTS FELT THAT THE MEETING PARTICIPANTS TALKED ABOVE THEIR HEADS AND WERE NOT ADDRESSING THEIR QUESTIONS. AS A RESULT, A NUMBER OF RESIDENTS WALKED OUT OF THE MEETING.

ANOTHER FREQUENTLY EXPRESSED CONCERN WAS THAT NATIONAL STARCH WAS COVERING UP SOMETHING. THIS CONCERN APPEARS TO STEM FROM NATIONAL STARCH'S PUBLIC STATEMENT ABOUT INCIDENTS AT THE PLANT, WHICH APPEARED TO SUGGEST THAT "THINGS WERE UNDER CONTROL" WHEN, IN MANY RESIDENTS' VIEW, THEY WERE NOT. IN ADDITION, NATIONAL STARCH HAS BEEN RELUCTANT TO RELEASE INFORMATION ON THE CHEMICALS USED AND REFUSED TO TAKE CASE REPRESENTATIVES INSIDE THE CEDAR SPRINGS ROAD PLANT DURING THE PLANT TOUR.

RESIDENTS IN AREAS ALONG GASKEY ROAD, IN THE LITTLE ACRES MOBILE HOME SUBDIVISION AND IN THE TRAILER PARK ON THE EAST OF US HIGHWAY 601/BUS 29 SHARED MANY OF THE SAME CONCERNS AS RESIDENTS OF KINGS FOREST, BUT BECAUSE THEY RELIED ON PRIVATE WELLS FOR WATER, GROUNDWATER CONTAMINATION WAS A HIGHER PRIORITY FOR THE CITIZENS. RESIDENTS ALONG GASKEY ROAD HAVE A CREEK THAT DRAINS THE NATIONAL STARCH PROPERTY RUNNING THROUGH THEIR PROPERTY. THESE RESIDENTS ARE CONCERNED

ABOUT DOMESTIC ANIMALS DRINKING THE CONTAMINATED CREEK WATER, AND HAVE ASKED EPA TO SAMPLE THE CREEK.

III. SUMMARY OF MAJOR QUESTIONS AND COMMENTS RECEIVED DURING THE PUBLIC MEETING AND EPA'S RESPONSES TO THESE COMMENTS

THE FOLLOWING IS A SUMMARY OF THE MAJOR ORAL COMMENTS, CONCERNS, AND QUESTIONS RAISED DURING THE PUBLIC MEETING ON JULY 30, 1990 BY THE LOCAL RESIDENTS TOGETHER WITH EPA'S RESPONSES TO THESE COMMENTS.

COMMENT: A LOCAL RESIDENT EXPRESSED CONCERN REGARDING THE RESAMPLING CONDUCTED IN THE SURFACE WATER SYSTEM ADJACENT TO THE SITE. THE RESULTS INDICATED LOW LEVELS OF CONTAMINATION IN BOTH SURFACE WATER AND SEDIMENT; HOWEVER, THE SAMPLING WAS CONDUCTED AFTER HURRICANE HUGO AND MAY HAVE BEEN AFFECTED BY EXCESS RAINFALL OVERFLOWING THE RUNOFF CONTAINMENT SYSTEM. THE RESIDENT QUESTIONED HOW EPA COULD BE CERTAIN OF CONTAMINANT LEVELS NOW OR IN THE FUTURE WHEN ADDITIONAL RAINFALL AND/OR HURRICANES OCCUR.

RESPONSE: EPA RECENTLY CONDUCTED FURTHER TESTING OR REQUESTED THAT THE NORTHEASTERN TRIBUTARY BE

RESAMPLED. DATA SUBMITTED THE WEEK PRIOR TO THE MEETING INDICATED CONTAMINATION IN BOTH SURFACE WATER AND SEDIMENTS. FURTHER STUDY IS REQUIRED.

COMMENT: A LOCAL RESIDENT QUESTIONED WHETHER THE SURFACE WATER SAMPLED WAS RUNOFF FROM PRESENT OPERATIONS AT THE SITE.

RESPONSE: TO DATE, EPA HAS RECEIVED ONLY PRELIMINARY SURFACE WATER SAMPLING RESULTS AND CAN NOT PROVIDE A DEFINITIVE ANSWER AT THIS POINT IN TIME.

COMMENT: A LOCAL RESIDENT STATED CONCERN THAT THE CONTAMINATION LEVELS DETECTED MAY BE DUE TO PAST OPERATIONS OR CURRENT SITE OPERATIONS. THE RESIDENT QUESTIONED WHY EPA COULD NOT IDENTIFY THE SOURCE OF CONTAMINANTS AND WHETHER TESTING WOULD CONTINUE UNTIL THE SOURCE WAS IDENTIFIED. THE RESIDENT ALSO EXPRESSED FRUSTRATION WITH EPA OFFICIALS STATING THAT HURRICANE HUGO WAS USED AS AN EXCUSE AND THE ENTIRE PROCESS WAS TAKING TOO LONG.

RESPONSE: EPA RECENTLY RECEIVED THE PRELIMINARY SAMPLING RESULTS. THE SUPPLEMENTARY REMEDIAL INVESTIGATION REPORT STATED THAT HURRICANE HUGO AND THE RESULTING RUNOFF CAUSED THE CONTAMINATION. EPA, HOWEVER, WAS NOT SATISFIED WITH THIS DETERMINATION AND REQUESTED ADDITIONAL SAMPLING WHICH WAS COMPLETED EARLIER IN THE MONTH. ALTHOUGH HURRICANE HUGO OCCURRED TEN MONTHS EARLIER, THE SUPPLEMENTAL REMEDIAL INVESTIGATION REPORT WAS NOT SUBMITTED THEN AND THE MOST CURRENT DATA INDICATES THAT THE CONTAMINATION IS NOT DUE TO HURRICANE HUGO. ANOTHER PROBLEM EXISTS.

COMMENT: A LOCAL RESIDENT QUESTIONED IF THE CONTAMINATION WAS CAUSED BY ONSITE OPERATIONS.

RESPONSE: ONSITE OPERATIONS MAY BE THE CAUSE, BUT THIS CANNOT YET BE CONFIRMED. (THE EPA OFFICIAL USED THE CONTOUR MAP TO EXPLAIN WHERE THE RESAMPLING TOOK PLACE.) RESAMPLING EFFORTS SHOULD PROVIDE MORE DEFINITIVE INFORMATION.

COMMENT: A LOCAL RESIDENT STATED THAT SAMPLES FROM THE RUNOFF IN THE TRIBUTARIES WERE SUBMITTED BY THE RESIDENT TWO YEARS AGO AND THAT "OIL AND JUNK" WERE PRESENT IN GRANTS CREEK; YET EPA CLAIMS TO HAVE ONLY RECENTLY DISCOVERED THIS.

RESPONSE: THIS IS NOT THE FIRST INDICATION OF CONTAMINATION. THE PROPOSED PLAN SPECIFICALLY APPLIES TO THE TRIBUTARIES AND THE ROD FOR OPERABLE UNIT 1 REQUIRES PERIODIC MONITORING UNTIL PLANS ARE MADE TO ADDRESS THE CONTAMINATION IN THE TRIBUTARY. IT IS A LONG PROCESS AND IT HAS BEEN TWO YEARS.

COMMENT: A RESIDENT ARGUED THAT FIVE YEARS HAD PASSED SINCE THE PROCESS BEGAN AND FOURTEEN YEARS HAD PASSED SINCE THE BURYING OF WASTE WAS DISCONTINUED. THE RESIDENT EXPRESSED CONCERN REGARDING THE POSSIBILITY THAT POLLUTANTS WERE PRESENT IN THE RUNOFF FROM THE SITE AND QUESTIONED WHETHER CITIZENS WOULD HAVE TO WAIT FIVE MORE YEARS TO HAVE THIS CONFIRMED BY EPA. THE RESIDENT STATED THAT EPA SHOULD LEAVE IT OUT IF THEY ARE NOT PLANNING TO RESOLVE THE PROBLEM.

RESPONSE: THE INVESTIGATION BEGAN IN 1986 AND THE INITIAL RESULTS INDICATED CERTAIN WATER CONTAMINATION. IT WAS ORIGINALLY THOUGHT THAT THE CONTAMINATION CAME FROM A TRENCH AREA, BUT THAT WAS DISPROVED. IT WAS LATER THOUGHT THAT THE CONTAMINATION ORIGINATED FROM THE PLANT PROPERTY; HOWEVER, AFTER THE PLANT INCORPORATED SPILL CONTROL MEASURES, SURFACE WATER CONTAMINATION REMAINED. NOW EPA IS UNCERTAIN OF THE SOURCE OF CONTAMINANTS AND MUST REINVESTIGATE.

COMMENT: A LOCAL RESIDENT ASKED EPA TO IDENTIFY THE CONTAMINANTS.

RESPONSE: EPA IS ADDRESSING THE SOIL PROBLEM AND, AS A WHOLE, MIGRATION OF CONTAMINANTS FROM THE

SITE WILL BE STOPPED. ONCE THE EXTRACTIONS ARE COMPLETED, THE MAIN SOURCE OF CONTAMINATION WILL NOT BE AS GREAT A THREAT TO THE COMMUNITY. THE MAIN CONTAMINANT IS 1,2 DICHLOROETHANE AND MAY BE PRESENT BECAUSE OF RESIDUAL CONTAMINATION OR CURRENT PLANT OPERATIONS; THIS HAS NOT BEEN DETERMINED.

COMMENT: A LOCAL RESIDENT ASKED EPA TO CONFIRM THAT CONTAMINANTS ARE STILL PRESENT, MIGRATION STILL OCCURS, AND THEREFORE, THE PROBLEM IS NOT SOLVED.

RESPONSE: THAT IS CORRECT, THE PROBLEM HAS NOT BEEN SOLVED. HOWEVER, EPA SAMPLED FURTHER DOWNSTREAM AND DETERMINED THAT ONCE SURFACE WATER LEFT THE SITE PROPERTY, IT WAS NO LONGER CONTAMINATED.

COMMENT: A RESIDENT QUESTIONED HOW FAR DOWN STREAM FROM THE SITE THE INITIAL SEARCH WAS CONDUCTED, AND IF IT REACHED GRANTS CREEK.

RESPONSE: NO. IN 1987, DOWNSTREAM SAMPLING WAS CONDUCTED TO MR. EDISON'S HOUSE.

COMMENT: A RESIDENT STATED THAT THEIR WATER WAS NOT TESTED.

RESPONSE: ONLY SURFACE WATER WAS SAMPLED.

COMMENT: A RESIDENT ASKED HOW MANY PARTS PER MILLION WERE DETECTED.

RESPONSE: THE LEVELS WERE MEASURED IN PARTS PER BILLION AND THE HIGHEST CONCENTRATION DETECTION WAS LESS THAN TWO PARTS PER BILLION IN SURFACE WATER.

COMMENT: A LOCAL RESIDENT EXPRESSED CONFUSION REGARDING THE MAP AND ASKED WHAT THE SYMBOLS MEANT.

RESPONSE: THE MAP DEPICTS THE GROUNDWATER EXTRACTION SYSTEM AND WAS INCLUDED IN THE HANDOUTS TO AID IN ANSWERING QUESTIONS.

COMMENT: A LOCAL RESIDENT QUESTIONED WHY EPA WAS UNCONCERNED ABOUT CONTAMINATION DISCOVERED AT A DEPTH OF 18 FEET WHEN AREA WATER WELLS REACH DEPTHS OF 100 FEET.

RESPONSE: THE MEASUREMENT OF 18 FEET PERTAINED TO THE SOIL IN THE TRENCH AREA; NOT GROUNDWATER.

COMMENT: A RESIDENT ADDED THE CONCERN THAT IF THE SOIL WAS CONTAMINATED AT 18 FEET, THE GROUNDWATER WOULD ALSO BE CONTAMINATED AND AT AN EARLIER MEETING IT WAS EXPLAINED THAT GROUNDWATER MOVES ONE FOOT PER YEAR. THEREFORE, THERE WAS CONCERN THAT CONTAMINATED WATER WOULD EVENTUALLY REACH DRINKING WATER WELLS.

RESPONSE: THE MEASUREMENT OF ONE FOOT PER YEAR REFERS TO LATERAL MOVEMENT; NOT VERTICAL MOVEMENT.

COMMENT: A RESIDENT EXPLAINED THAT THE AREA IS EXPERIENCING DROUGHT CONDITIONS AND THAT GROUNDWATER MOVES UP AND DOWN.

RESPONSE: THE GROUNDWATER WILL BE ADDRESSED IN THE PUMP AND TREAT SYSTEM. EXTRACTION WELLS WILL BE INSTALLED WITHIN TWO MONTHS AND ARE DESIGNED TO CAPTURE AND CONTAIN THE CONTAMINATE PLUME. THE EXTRACTION DESIGN WILL STOP THE MIGRATION OF CONTAMINANTS IN THE GROUNDWATER. THERE WILL ALSO BE AN EXTENSIVE MONITORING SYSTEM TO ENSURE THAT THE EXTRACTION SYSTEM WORKS.

COMMENT: A RESIDENT QUESTIONED WHETHER THE "NO ACTION" ALTERNATIVE WAS INTENDED FOR SOIL, WHILE

GROUNDWATER WOULD BE PUMPED OUT. THE RESIDENT EXPRESSED CONFUSION REGARDING HOW THE SOIL WILL REMAIN THE SAME WHILE THE GROUNDWATER IS UNDER REMEDIATION.

RESPONSE: EPA REPRESENTATIVES EXPLAINED THAT THE CONFUSION RESULTED FROM THE EXISTENCE OF TWO SEPARATE OPERABLE UNITS; OPERABLE UNIT 1 ADDRESSED CONTAMINATED GROUNDWATER AND OPERABLE UNIT 2 ADDRESSED CONTAMINATED TRENCH AREA SOILS. IN 1988, EPA PROPOSED THE GROUNDWATER EXTRACTION SYSTEM TO CLEAN UP OPERABLE UNIT 1; CONTAMINATED GROUNDWATER. IN ADDITION TO GROUNDWATER REMEDIATION, THE RECORD OF DECISION (ROD) FOR OPERABLE UNIT 1 REQUIRED ADDITIONAL STUDIES ON THE TRENCH AREA SOILS AND MONITORING OF THE NORTHEAST TRIBUTARY TO DETERMINE THE CONTAMINANT SOURCE. THE PRESENT MEETING PROPOSES NO FURTHER ACTION ON SOILS. THE "NO-ACTION" ALTERNATIVE WILL BE CONSIDERED ALONG WITH THE OTHERS. NO FURTHER ACTION WOULD ALLOW NATURAL RAINFALL TO PERCOLATE THROUGH THE SOIL. THE PUMP AND TREAT SYSTEM WILL ACTIVELY DRAW WATERS THROUGH THE CONTAMINATED SOIL AREA. ALL ALTERNATIVES ARE EVALUATED ON NINE CRITERIA. THE GROUNDWATER REMEDIATION WILL TAKE 25 TO 30 YEARS. THE GROUNDWATER PUMP AND TREAT SYSTEM WILL STOP CONTAMINANT MIGRATION, BUT THE CONTAMINANTS PRESENT WILL HAVE TO BE ADDRESSED. MODELING OF SOIL FLUSHING ESTIMATES THAT THIS ALTERNATIVE WILL REQUIRE 22 YEARS FOR COMPLETION. IN EFFECT, THE SOILS WILL BE ADDRESSED WITH THE GROUNDWATER PUMP AND TREAT SYSTEM.

COMMENT: A RESIDENT QUESTIONED HOW MANY YEARS GROUNDWATER WOULD BE PUMPED.

RESPONSE: APPROXIMATELY 25 TO 30 YEARS.

COMMENT: A RESIDENT QUESTIONED WHETHER THE COST DESCRIBED IN THE HANDOUT APPLIED TO GROUNDWATER CLEANUP.

RESPONSE: NO, THE FIGURES PROVIDED APPLY ONLY TO SOILS.

COMMENT: A LOCAL RESIDENT QUESTIONED WHETHER THE WELLS WERE ALL INSTALLED AND OPERATING AND EXPRESSED CONFUSION REGARDING THE TERMINOLOGY USED IN THE HANDOUT.

RESPONSE: USING A FIGURE PROVIDED IN THE HANDOUTS, THE EPA REPRESENTATIVE IDENTIFIED THE LOCATIONS OF THE MONITORING WELLS FOR THE ORIGINAL REMEDIAL INVESTIGATION.

COMMENT: A RESIDENT ASKED HOW DEEP THE WELLS ARE.

RESPONSE: SOME WELLS REACH THE SAPROLITE, OR SOIL MATERIAL, AND OTHERS REACH THE BEDROCK. SOME LOCATIONS HAVE PAIRED WELLS. THE DEPTH OF THE WELLS VARIES BECAUSE THE DEPTH OF THE BEDROCK VARIES.

COMMENT: A RESIDENT QUESTIONED WHETHER ALL THE WELLS DESCRIBED WERE CONTAMINATED.

RESPONSE: THE EPA REPRESENTATIVE USED A DIAGRAM TO EXPLAIN THAT THE WELLS NEAR THE TRENCH AREA WERE FOUND TO CONTAIN HIGH LEVELS OF VOLATILE ORGANICS. THE GROUNDWATER MIGRATES TOWARD THE SOUTHWEST TRIBUTARY AND THE FURTHEST DOWN GRADIENT WELL REVEALED NO CONTAMINATION. THE HIGHEST LEVELS OF CONTAMINATION ARE IN THE TRENCH AREA; THIS AREA WAS IDENTIFIED AS THE SOURCE; THEREFORE, WELLS WILL BE INSTALLED INTO THE SAPROLITE IN THE TRENCH AREA. THREE WELLS, INDICATED ON THE DIAGRAM, WILL BE INSTALLED IN THE TRENCH AREA AND WILL REACH THE BEDROCK SYSTEM. PUMPING THE BEDROCK WELLS WILL ALSO INFLUENCE THE SAPROLITE; AIDING IN THE SITE CLEANUP. ADDITIONAL WELLS WILL BE INSTALLED INTO THE BEDROCK DOWN GRADIENT OF THE SOURCE AREA IN ORDER TO STOP MIGRATION. MONITORING WELLS WILL BE USED TO ENSURE THAT THE SYSTEM OF EXTRACTION WELLS IS EFFECTIVE.

COMMENT: A RESIDENT INQUIRED ABOUT THE MONITORING WELL DEPTHS.

RESPONSE: MONITORING WELL DEPTHS WILL VARY DEPENDING ON THE DEPTH OF THE BEDROCK. NEAR THE TRENCH AREAS, BEDROCK IS LOCATED AT DEPTHS OF 20 TO 30 FEET. IN AREAS ADJACENT TO THE SOUTHWEST TRIBUTARY, BEDROCK IS FOUND AT SHALLOWER DEPTHS.

COMMENT: A RESIDENT QUESTIONED IF ALL MONITORING WELLS WERE CONTAMINATED.

RESPONSE: ANALYTICAL RESULTS FROM THE WELLS LOCATED IN THE TRENCH AREAS CONFIRMED CONTAMINATION. LEVELS OF CONTAMINATION FOUND DECREASED AS DISTANCE DOWN GRADIENT FROM THE TRENCH AREA INCREASED. ANALYTICAL RESULTS FROM THE OUTLYING DOE GRADIENT WELLS INDICATED NO CONTAMINATION.

COMMENT: A RESIDENT EXPRESSED CONFUSION STATING THAT THE SOIL WAS CONTAMINATED AT 18 FEET, A WELL WAS CONTAMINATED AT APPROXIMATELY 30 FEET AND THE CONTAMINATION MUST CONTINUE DEEPER THAN 30 FEET.

RESPONSE: DURING THE INITIAL INVESTIGATION, VARIOUS LEVELS OF CONTAMINANTS WERE FOUND, DEPENDING ON LOCATION OF THE BORING. HOWEVER, NONE OF THE SAMPLING LOCATIONS REVEALED LEVELS AS HIGH AS EXPECTED. THEREFORE, IT WAS CONCLUDED THAT GROUNDWATER WAS FLUSHING THROUGH THE SOIL. EPA PROPOSES TO ALLOW THIS NATURAL FLUSHING OF THE SOIL TO CONTINUE AND BEGIN REMEDIATION EFFORTS WITH THE CONTAMINATED GROUNDWATER.

COMMENT: A RESIDENT STATED THAT THE PROPOSED REMEDIAL ALTERNATIVE WOULD TAKE TOO LONG.

RESPONSE: GROUNDWATER CLEANUP IS A DIFFICULT PROCESS.

COMMENT: THE RESIDENT ASKED HOW LONG ALTERNATIVES 3, 4, AND 5 WOULD TAKE.

RESPONSE: OPINIONS VARY ON THE DURATION OF THOSE ALTERNATIVES. HOWEVER, NO MATTER WHAT IS DONE WITH THE SOIL, GROUNDWATER REMEDIATION WILL REQUIRE 25 TO 30 YEARS TO COMPLETE.

COMMENT: A LOCAL RESIDENT QUESTIONED WHY EPA SHOULD ALLOW WATER TO INFILTRATE CONTAMINATED SOIL WHICH THEN CONTAMINATES THE WATER. THE RESIDENT QUESTIONED IF IT WOULD NOT BE MORE BENEFICIAL TO REPLACE THE CONTAMINATED SOIL WITH CLEAN SOIL.

RESPONSE: DESPITE THE CHOSEN METHOD FOR SOIL REMEDIATION, GROUNDWATER REMEDIATION WILL REQUIRE 25 TO 30 YEARS.

COMMENT: A LOCAL RESIDENT STATED THAT REMEDIATION OF THE SITE WOULD TAKE LESS TIME IF ALTERNATIVES 3, 4, OR 5 WERE CHOSEN AND COST SHOULD NOT BE A FACTOR IN THE DECISION.

RESPONSE: THE APPROPRIATE ALTERNATIVE IS CHOSEN BASED ON NINE CRITERIA FOR EVALUATION. COST MUST BE A PART OF THE DECISION. THERE SEEMS TO BE CONFUSION REGARDING THE LEVELS OF CONTAMINATION DETECTED AT 18 FEET. THE SOIL WAS CONTAMINATED AT 18 FEET, NOT THE GROUNDWATER.

COMMENT: A LOCAL RESIDENT QUESTIONED WHETHER THE GROUNDWATER WAS MORE CONTAMINATED THAN THE SOIL AT 18 FEET AND WHY IT WOULD NOT BE REASONABLE TO REMOVE THE SOIL.

RESPONSE: ORIGINALLY THE SOURCE OF CONTAMINATION IN THE SOIL WAS SERIOUS. HOWEVER, NOW THE SOILS HAVE BEEN FLUSHED; REDUCING THE LEVEL OF CONTAMINANTS SO THEY ARE NO LONGER A THREAT TO HUMAN HEALTH. THE LEVEL OF CONTAMINATION DETECTED IN THE GROUNDWATER IS A THREAT TO HUMAN HEALTH, ESPECIALLY SINCE THERE IS A POSSIBILITY OF GROUNDWATER CONSUMPTION. THEREFORE, THE GROUNDWATER MUST BE ADDRESSED AND THE REMEDIATION PROCESS WILL REQUIRE 25 TO 30 YEARS TO COMPLETE. THE CONTAMINATED SOIL IS NO LONGER A THREAT AND IT LIES 15 FEET BELOW LAND SURFACE; FURTHER REDUCING THE POTENTIAL THREAT. THIRTY YEARS FOR GROUNDWATER REMEDIATION IS ONLY AN ESTIMATE. REMEDIAL ACTIVITIES WILL CONTINUE UNTIL THE CONTAMINANTS REACH AN ACCEPTABLE LEVEL.

COMMENT: A LOCAL RESIDENT QUESTIONED WHAT THE ACCEPTABLE LEVEL IS.

RESPONSE: MONITORING WELLS ARE IN PLACE TO ALLOW CONTINUED EXAMINATION OF CONTAMINANT LEVELS. TOXICOLOGISTS HAVE DEVELOPED CLEANUP GOALS FOR THE SITE THAT DETERMINE THE LEVEL AT WHICH THE GROUNDWATER WILL BE USEABLE. THE EXTRACTION WELLS WILL BE UTILIZED UNTIL THESE USABLE LEVELS ARE MET. USING COMPUTER MODELING BASED ON THE CONTAMINATION LEVELS PRESENT, THE REMEDIATION IS ESTIMATED TO REQUIRE 25 TO 30 YEARS. TECHNOLOGY IS NOT AVAILABLE AT THE PRESENT TIME TO CLEAN UP THE SITE IN LESS TIME.

COMMENT: A RESIDENT OF STONYBROOK QUESTIONED WHY NO MONITORING WELLS WERE INSTALLED ON THE NORTHEAST SIDE OF THE SITE. ALTHOUGH GROUNDWATER WAS EXPECTED TO FLOW IN THE OTHER DIRECTION, THE RESIDENT EXPRESSED CONCERN THAT SOME WATER MAY SEEP TO THE NORTHEAST.

RESPONSE: THERE ARE FIVE WELLS LOCATED ON THAT SIDE OF THE SITE. THE TRENCHES ARE ON A RIDGE THAT DROPS OFF MORE STEEPLY TOWARD THE SOUTHWEST THAN TOWARD THE PLANT.

COMMENT: A RESIDENT STATED THAT THERE IS ANOTHER BRANCH, CALLED THE SOUTHWEST TRIBUTARY, THAT RUNS ALONG CAMP ROAD AND INTO GRANTS CREEK. FOR SEVERAL YEARS OFFICIALS CLAIMED THAT CONTAMINATION WAS PRESENT IN THAT TRIBUTARY AND ANOTHER BUSINESS WAS BLAMED. THERE IS A POND AT THE CORNER OF CEDAR SPRINGS AND NATIONAL STARCH. THE POND IS FED BY A SPRING ON THE NATIONAL STARCH PROPERTY. THE RESIDENT QUESTIONED WHERE THE WATER CAME FROM.

RESPONSE: EPA WAS UNAWARE OF THE SPRING.

COMMENT: THE RESIDENT STATED THAT THE SPRING WAS APPROXIMATELY 100 FEET FROM THE PROPERTY LINE.

RESPONSE: THE CONTAMINANT PLUME MIGRATES IN THE OPPOSITE DIRECTION. THE CONTAMINATED GROUNDWATER CANNOT MIGRATE TO THAT SPRING.

COMMENT: A REPRESENTATIVE OF NATIONAL STARCH SPOKE TO HELP CLEAR CONFUSION REGARDING THE LOCATION OF THE POND AND SPRING. HE STATED THAT THE MAP WAS OF POOR QUALITY. THE POND IS NEAR THE NEW WA BROWN FACILITY AND DOES NOT ORIGINATE FROM THE NATIONAL STARCH PROPERTY. THE SPRING THAT FEEDS THE POND DOES NOT ORIGINATE FROM NATIONAL STARCH PROPERTY.

RESPONSE: EPA RECENTLY STUDIED ONSITE GROUNDWATER AND SURFACE WATER FLOW. CONTAMINATION WILL NOT FLOW UPSTREAM TO THE SPRING. SURFACE WATER FLOW IS TO THE NORTH ALONG THE NORTHEAST TRIBUTARY.

COMMENT: A RESIDENT ASKED EPA TO CLARIFY OF THE DIRECTIONS OF GROUNDWATER AND SURFACE WATER FLOW.

RESPONSE: EVIDENTLY, SOME OF THE SURFACE WATER IN THE CREEKS ORIGINATES FROM THE SPRINGS AND FLOWS TO THE NORTH THROUGH THE NORTHEAST TRIBUTARY.

COMMENT: A RESIDENT QUESTIONED WHETHER THAT WATER HAD BEEN TESTED.

RESPONSE: YES, THE WATER WAS SAMPLED EARLIER AND AGAIN THIS MONTH. EPA HAS OBTAINED THE PRELIMINARY RESULTS.

COMMENT: A RESIDENT QUESTIONED WHAT TYPE OF ZONING RESTRICTIONS WILL BE PLACED ON THE NATIONAL STARCH AND CHEMICAL CORPORATION SUPERFUND SITE AND THE SURROUNDING 250 (APPROXIMATELY) ACRES. THE RESIDENT QUESTIONED IF ONLY INDUSTRIAL DEVELOPMENT WILL BE ALLOWED.

RESPONSE: EPA IS UNSURE AT THIS TIME. IT IS NATIONAL STARCH'S RESPONSIBILITY TO INFORM ANY PROSPECTIVE BUYERS THAT THE SITE IS A SUPERFUND SITE. THIS IS A PART OF THE CONSENT DECREE

ADMINISTERED BY A COURT OF LAW.

COMMENT: A RESIDENT AND REPRESENTATIVE OF NATIONAL STARCH STATED THAT FOR ALL PRACTICAL PURPOSES, NOTHING CAN BE BUILT ON THE SITE. IF A SUBDIVISION WERE DEVELOPED IN THE SURROUNDING AREA, IT IS UNLIKELY THAT THE HOMES WOULD SELL. THEREFORE, THE POTENTIAL DEVELOPMENT OF THE ENTIRE AREA IS VERY RESTRICTED. THAT IS WHY RESIDENTS ADVOCATE COMPLETE SITE CLEANUP.

RESPONSE: COMMENT ACKNOWLEDGED; NO FURTHER RESPONSE.

COMMENT: A RESIDENT QUESTIONED WHERE THE CONTAMINATED WATER WOULD BE DISPOSED.

RESPONSE: THE PRESENT DESIGN PLANS REQUIRE UTILIZATION OF SEVERAL DIFFERENT TECHNOLOGIES TO REMOVE VOLATILES AND METALS FROM THE WATER BEFORE DISCHARGING INTO THE PUBLICLY OWNED TREATMENT WORKS.

COMMENT: A RESIDENT ASKED WHAT THE ALTERNATIVE PLAN IS IF THE PUBLICLY OWNED TREATMENT WORKS DOES NOT ALLOW THIS TYPE OF DISCHARGE.

RESPONSE: AN ALTERNATIVE DISCHARGE METHOD WILL BE DETERMINED. ONE OPTION IS TO OBTAIN A DISCHARGE PERMIT UNDER THE NATIONAL POLLUTION DISCHARGE EFFLUENT.

COMMENT: A RESIDENT ARGUED THAT THE STATE IS HAVING DIFFICULTY SITING AN INDUSTRIAL WASTE INCINERATOR. THIS COULD PRESENT OBSTACLES TO THE WATER TREATMENT PLAN FOR THIS SITE.

RESPONSE: NO, THAT WILL NOT AFFECT WATER TREATMENT. EPA IS ONLY LOOKING FOR A PLACE TO DISCHARGE THE WATER.

COMMENT: A RESIDENT QUESTIONED WHETHER THE WATER WOULD BE TRANSPORTED TO THE SALISBURY WASTE TREATMENT FACILITY AND HOW IT WOULD BE TREATED.

RESPONSE: THE WATER WILL BE TREATED THROUGH AIR STRIPPING BEFORE IT LEAVES THE SITE. THERE ARE SEVERAL STAGES IN THE TREATMENT, INCLUDING A PRECIPITANT PHASE AND A BIO-REMEDIATION PHASE, THAT WILL REMOVE THE CONTAMINATION TO MEET CLEANUP GOALS.

COMMENT: A RESIDENT QUESTIONED IN WHAT BUILDING THE TREATMENT WOULD OCCUR.

RESPONSE: ACCORDING TO THE ADMINISTRATIVE ORDER CONSENT DECREE, NATIONAL STARCH IS RESPONSIBLE.

COMMENT: A LOCAL RESIDENT INQUIRED ABOUT OTHER FACILITIES WHERE WATER TREATMENT IS IN PROCESS THAT MIGHT SERVE AS EXAMPLES.

RESPONSE: THERE ARE GROUNDWATER TREATMENT SYSTEMS ALL AROUND THE COUNTRY, INCLUDING TWO IN NORTH CAROLINA; THE CELANESE SITE IN SHELBY AND THE SODYCO SITE IN CHARLOTTE.

COMMENT: A RESIDENT ASKED IF THE REFERENCED SITES ARE PERFORMING THE SAME OPERATION AND, IF SO, HOW LONG HAVE THEY BEEN OPERATING.

RESPONSE: YES. THE CELANESE SITE HAS BEEN IN OPERATION FOR AT LEAST A YEAR AND THE SODYCO OPERATIONS BEGAN LAST MONTH.

COMMENT: A RESIDENT EXPRESSED CONCERN ABOUT THE ODOR FROM THE SITE AND ASKED IF SOMETHING COULD BE DONE TO SOLVE THE PROBLEM.

RESPONSE: THE SOILS IN THE TRENCH AREA ARE TOO DEEP TO PRODUCE EMISSIONS. THE ODOR PROBLEM IS

NOT ADDRESSED UNDER SUPERFUND.

COMMENT: A RESIDENT STATED THAT IT WAS PREVIOUSLY EXPLAINED THAT GROUNDWATER, SOILS AND AIR WERE EVALUATED TO DETERMINE AN HRS SCORE OF 28.5. THE RESIDENT QUESTIONED IF AIR WAS EVALUATED DURING THE SCORING PROCESS.

RESPONSE: DURING THE HRS SCORING PROCESS, AIR QUALITY IS CONSIDERED. HOWEVER, ODORS EMITTED FROM ACTIVE OPERATIONS CANNOT BE ADDRESSED UNDER CERCLA. CERCLA SUPERFUND WAS DESIGNED FOR ABANDONED AREAS; THIS SITE IS A CURRENT OPERATING FACILITY. THE TRENCH AREA WAS USED FOR DISPOSAL PRIOR TO 1980; THEREFORE, THAT AREA IS SUBJECT TO CERCLA.

COMMENT: THE RESIDENT QUESTIONED WHETHER THE GROUND SURFACE POLLUTION OF THE NORTHEAST DRAINAGE SYSTEM WOULD BE ADDRESSED SINCE IT IS PRODUCED BY CURRENT PLANT OPERATIONS.

RESPONSE: YES, IT IS ADDRESSED UNDER SUPERFUND.

COMMENT: A RESIDENT QUESTIONED WHETHER REGULATIONS EXIST TO ADDRESS FACILITY DESIGN PROBLEMS THAT ALLOW DISCHARGE INTO THE ATMOSPHERE AND POSSIBLE EXPLOSION. THAT MAY BE THE SOURCE OF CONTAMINATION IN THE NORTHEAST DRAINAGE SYSTEM.

RESPONSE: YOU HAVE DESCRIBED A POSSIBLE CONTAMINATION SOURCE THAT WILL HAVE TO BE INVESTIGATED. THE ENTIRE NATIONAL STARCH SITE IS INCLUDED ON THE SUPERFUND LIST. IF CURRENT OPERATIONS ARE RESPONSIBLE FOR SURFACE WATER CONTAMINATION, IT WILL BE ADDRESSED.

COMMENT: A RESIDENT QUESTIONED WHETHER CHEMICALS WOULD BE RELEASED TO THE AIR DURING THE EXTRACTION AND AIR STRIPPING PROCESS AND IF AN AIR DISCHARGE PERMIT IS REQUIRED.

RESPONSE: NO CONTAMINANTS WILL BE RELEASED INTO THE ATMOSPHERE. THE SYSTEM IS DESIGNED TO CONTAIN THE CONTAMINANTS IN COMPLIANCE WITH THE CLEAN AIR ACT.

COMMENT: A RESIDENT COMMENTED THAT WELLS SHOULD BE INSTALLED ON THE NORTHEAST SIDE AND GROUNDWATER AND SURFACE WATER STUDIES SHOULD BE CONDUCTED EVERY YEAR OR EVERY 2 1/2 YEARS TO DETERMINE WHETHER THE CLEANUP EFFORT IS SUCCESSFUL.

RESPONSE: ACKNOWLEDGED COMMENT; NO FURTHER RESPONSE.

COMMENT: A RESIDENT QUESTIONED HOW CHEMICALS CAN BE DETECTED IN HIGH CONCENTRATIONS AT ONE LOCATION AND IN LOWER CONCENTRATIONS (OR ABSENT) IN LOCATIONS DOWNSTREAM.

RESPONSE: THE CHEMICALS DETECTED WERE VOLATILE ORGANICS WHICH TEND TO EVAPORATE. THE MOVEMENT OF THE WATER AND THE EXPOSURE TO AIR CAUSED THEM TO EVAPORATE.

COMMENT: A RESIDENT DISAGREED STATING THAT ONE CHEMICAL, 1,2-DICHLOROBENZENE, WILL NOT EVAPORATE.

RESPONSE: THE QUESTION WAS ANSWERED IN GENERAL TERMS.

COMMENT: A RESIDENT QUESTIONED WHETHER HEAVY METALS WERE DETECTED DOWNSTREAM.

RESPONSE: NO.

COMMENT: A RESIDENT QUESTIONED WHETHER CONTAMINANTS WERE FOUND IN THE SEDIMENT AND WHETHER THEY ALSO MIGRATE DOWNSTREAM.

RESPONSE: VOLATILE ORGANIC COMPOUNDS WERE FOUND IN THE SEDIMENT BUT WERE NOT DETECTED DOWNSTREAM. THE SAPROLITE SOILS IN THE TRENCH AREA ARE WEATHERED, BYPRODUCTS OF THE BEDROCK; MAINLY SANDY, SILT MATERIAL. RESIDUAL ORGANICS WERE DETECTED IN THESE SOILS. THE WATER TABLE DEPTH IN THE AREA IS GREATER THAN 20 FEET; WITHIN THE SAPROLITE SOILS. EXTRACTION WELLS WILL BE INSTALLED WITHIN THE SAPROLITE SOILS. THE PUMPING WILL LOWER THE WATER TABLE AND CAUSE INFILTRATION. SOME OF THE CHEMICALS DETECTED MAY REACH ACCEPTABLE LEVELS WITHIN A FEW YEARS; HOWEVER, OTHERS (E.G., 1,2-DICHLOROETHANE) COULD REQUIRE 20 TO 30 YEARS TO REACH ACCEPTABLE LEVELS.

COMMENT: A RESIDENT QUESTIONED WHETHER THE CONTAMINANTS MUST MIGRATE TO THE WATER TABLE BEFORE CONCENTRATIONS WILL DIMINISH.

RESPONSE: YES, CONTAMINANTS WILL MOVE TO THE WATER TABLE AND THEN BE TRANSPORTED TO THE EXTRACTION SYSTEM.

COMMENT: A RESIDENT ASKED IF THE PROCESS IS BASICALLY LEACHING.

RESPONSE: THE WATER WILL MIX WITH THE GROUNDWATER AND BECOME PART OF THE GROUNDWATER PROBLEM.

THE CONTAMINATION AT THIS SITE INVOLVES SUBSURFACE SOIL AND GROUNDWATER. THE GROUNDWATER IS THE ROUTE OF TRANSPORT. THEREFORE, NATURAL LEACHING WILL CORRECT THE SOIL CONTAMINATION AND THE EXTRACTION SYSTEM WILL CORRECT THE GROUNDWATER.

COMMENT: A RESIDENT ASKED HOW MUCH WATER WILL BE PUMPED AND WHETHER THE PUMPS WILL RUN CONTINUOUSLY.

RESPONSE: THE PUMPAGE RATE MAY VARY. IN THE BEGINNING, MONITORING WILL HELP DETERMINE RATES AND OPERATING TIMES. THIS SITE MAY REQUIRE PERIODIC PAUSES IN PUMPING TO ALLOW THE SYSTEM TO REBOUND.

COMMENT: A RESIDENT ASKED WHO WILL RUN THE SYSTEM AND MAKE DAILY DECISIONS.

RESPONSE: THE SYSTEM IS AUTOMATED AND MONITORING WILL BE CONDUCTED REGULARLY.

COMMENT: A RESIDENT ASKED WHO WILL PERFORM THE MONITORING.

RESPONSE: NATIONAL STARCH IS RESPONSIBLE FOR MONITORING AND FOR CONTACTING EPA WHEN PROBLEMS OCCUR.

COMMENT: A RESIDENT QUESTIONED IF IT WAS POSSIBLE FOR THE WATER TO MIGRATE TO AN UNDERGROUND WATER FLOW, OTHER THAN THE WATER TABLE, AND CAUSE THE CONTAMINATION TO SPREAD.

RESPONSE: NO. THE SYSTEM IS DESIGNED TO SET UP A BARRIER AND CAPTURE THE CONTAMINATED GROUNDWATER.

COMMENT: A RESIDENT STATED THAT THE THEORY WAS UNDERSTANDABLE BUT EXPRESSED CONCERN THAT THE GROUNDWATER MAY, POSSIBLY, MOVE Laterally (E.G., THROUGH A FRACTURE IN THE BEDROCK) AND RISK FURTHER SPREAD OF THE CONTAMINANTS.

RESPONSE: EXTENSIVE RESEARCH WAS COMPLETED BEFORE THIS SYSTEM BECAME AN ALTERNATIVE. BY STUDYING PERMEABILITY RATES AND DIRECTION OF GROUNDWATER FLOW, POTENTIAL PROBLEMS ARE ANTICIPATED. AN EXTENSIVE MONITORING PROGRAM WAS DEVELOPED TO DETECT ANY PROBLEMS THAT OCCUR.

COMMENT: A RESIDENT QUESTIONED WHETHER EXTENSIVE GEOLOGICAL SURVEYS AND SYSTEM STUDIES WERE

CONDUCTED ON THE BEDROCK AT THE SITE.

RESPONSE: YES; THAT WAS PART OF THE REMEDIAL INVESTIGATION AND ADDITIONAL STUDIES WERE CONDUCTED DURING THE DESIGN PHASE.

A COMPUTER CODE CALLED "RESCUE" WAS USED TO DEVELOP CAPTURE ZONES FOR THE WELLS AND PROJECT A RATE OF EXTRACTION. THE MODELING ILLUSTRATED THAT CAPTURE ZONES WILL BE PRESENT, IN EFFECT, PROVIDING A WALL.

COMMENT: A RESIDENT ASKED HOW THE CONTAMINANT WALL WAS SPACED WITH REGARD TO THE WELLS AND HOW DEEP INTO THE BEDROCK IT REACHES.

RESPONSE: IT REACHES LESS THAN 500 FEET; THE DEPTH VARIES. THE MODELING PROGRAM USED CONSIDERS SEVERAL COMMON EQUATIONS ALONG WITH THE SLOPE OF THE WATER TABLE. THE PROGRAM PRODUCED A CAPTURE ZONE THAT COVERS THE ENTIRE AREA AND EACH INDIVIDUAL WELL. THE CONTAMINANT PLUME IS WITHIN THE CAPTURE ZONE FOR THE FOUR WELLS.

COMMENT: THE RESIDENT ASKED FOR A MORE SPECIFIC ESTIMATE OF THE CONTAINMENT WALL DEPTH.

RESPONSE: DURING THE REMEDIAL DESIGN IT WAS DETERMINED THAT THERE ARE VERY FEW FRACTURES IN THE BEDROCK BELOW 170 FEET. THE AQUIFER DOES NOT PRODUCE MUCH WATER AT THAT DEPTH AND THERE IS NO REASON TO INSTALL WELLS BELOW THAT DEPTH; THEREFORE, THE WELLS ARE ABOVE THE 200 FOOT MARK.

COMMENT: A RESIDENT QUESTIONED HOW DEEP THE CONTAMINANTS ARE IN THE AQUIFER.

RESPONSE: EPA HAS YET TO DETERMINE THE SPECIFIC DEPTH.

COMMENT: A RESIDENT QUESTIONED WHETHER THE CONTAMINANTS WOULD REACH A DEPTH OF 185 FEET IF 185-FOOT WELLS WERE INSTALLED.

RESPONSE: THE CONTAMINATION WILL MOVE WITH THE GROUNDWATER FLOW. THE GROUNDWATER WILL FLOW HORIZONTALLY WITHIN THE MORE FRACTURED INTERVAL RATHER THAN MOVING DOWNWARD. THE EXTRACTION SYSTEM ALLOWS FOR A LARGE OPEN AREA TO PUMP WATER FROM. THE WELLS WILL BE OPEN AND CONTAMINATION IN THE DIFFERENT ZONES WILL MOVE HORIZONTALLY TO THE DISCHARGE AREA.

COMMENT: A RESIDENT ASKED TO CLARIFY WHETHER CONTAMINANTS ABOVE 170 FEET WILL MIGRATE DOWN TO THAT LEVEL FOR EXTRACTION.

RESPONSE: YES. THE SAPROLITE AND THE BEDROCK ARE TOTALLY INTERCONNECTED IN THE TRENCH AREA. THE CONTAMINANTS PERCOLATE DOWN THROUGH THE SAPROLITE, INTO THE WATER TABLE AND FINALLY, INTO THE BEDROCK.

COMMENTS: A RESIDENT ASKED WHO NATIONAL STARCH HIRED AS CONSULTANTS AND WHETHER THE CONSULTANT WILL BE IN CHARGE OF MONITORING.

RESPONSE: NATIONAL STARCH HIRED INTERNATIONAL TECHNOLOGIES CORPORATION AS CONSULTANTS. THEY WILL BE ASSISTING THROUGHOUT CONSTRUCTION AND MONITORING.

COMMENT: A LOCAL RESIDENT STATED THAT WITHOUT THE CONSULTING ENGINEERS, THE MEETING IS A PUBLIC RELATIONS EFFORT. IN ONE YEAR TO 18 MONTHS FURTHER RESTRICTIONS MAY BE PLACED ON TRANSPORTING WASTES OUTSIDE THE STATE. THE RESIDENT EXPRESSED CONCERNS THAT AT THAT TIME, COMPANIES WILL DO WHATEVER THEY WANT WITH HAZARDOUS WASTES. FIVE TO 15 YEARS HAVE PASSED AND THERE STILL SEEMS TO BE LITTLE CONTROL OF THE CONTAMINATION AT THE NATIONAL STARCH SITE.

THE RESIDENT ADDED THAT A GENTLEMAN EMPLOYED BY EPA WAS PAID \$20,000 TO WORK ON THE SITE AND DECIDED THAT THE WASTES SHOULD BE STORED ABOVE THE GROUND. HOWEVER, THIS METHOD IS NOT EFFECTIVE.

RESPONSE: INDUSTRIAL WASTE IS A NATIONAL PROBLEM. THERE ARE LAWS IN EFFECT NOW AND NEW LAWS PASSED EVERY DAY TO HELP CONTROL/REMEDY THE PROBLEM.

COMMENT: A RESIDENT STATED THAT NATIONAL STARCH IS IN VIOLATION OF THEIR CURRENT DISCHARGE PERMIT AND ASKED IF EPA WAS AWARE OF IT.

RESPONSE: NO, EPA WAS NOT AWARE OF IT. THAT IS A STATE DELEGATED PROGRAM BUT EPA WILL INVESTIGATE THE VIOLATION.

COMMENT: A RESIDENT ASKED IF THE METHOD OF TREATMENT DISCUSSED WOULD DRAMATICALLY INCREASE THE AMOUNT OF EFFLUENT.

RESPONSE: NO. ONE OF THE CRITERIA IS THAT THE DISCHARGE EFFLUENT BE WITHIN COMPLIANCE.

COMMENT: A RESIDENT QUESTIONED WHETHER NEW, MORE RESTRICTIVE REGULATIONS ENACTED IN THE FUTURE WOULD APPLY TO THIS SITE.

RESPONSE: YES.

COMMENT: A RESIDENT ASKED WHAT AUTHORITY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL HEALTH AND NATURAL RESOURCES (DEHNR) HAS REGARDING DISCHARGES AND EMISSIONS AT NATIONAL STARCH.

RESPONSE: THERE ARE MANY DEPARTMENTS OF THE DEHNR. THE MOORESVILLE REGIONAL OFFICE HAS AUTHORITY OVER NPDES PERMITS, DISCHARGE INTO CREEKS, AIR PERMITS, ETC. THE SUPERFUND SECTION, PART OF THE DIVISION OF SOLID WASTE MANAGEMENT, ADDRESSES THE PAST WASTE DISPOSAL PRACTICES AT NATIONAL STARCH. EACH GROUP HAS ITS OWN LEGISLATIVE AND REGULATORY AUTHORITY.

COMMENT: A RESIDENT ASKED WHO, EXACTLY, SHOULD BE CONTACTED REGARDING THE SITE.

RESPONSE: CONTACT THE DIVISION OF ENVIRONMENTAL MANAGEMENT IN MOORESVILLE. FOR SUPERFUND ISSUES, CONTACT THE SUPERFUND SECTION. EPA WILL OBTAIN A CONTACT NAME AND TELEPHONE NUMBER FOR YOU.

IV. WRITTEN COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD AND EPA'S RESPONSE TO THESE COMMENTS

TABLE 3

GROUNDWATER CONTAMINANTS OF CONCERN WITH HIGHEST CONCENTRATIONS DETECTED IN GROUNDWATER,
SUBSURFACE SOIL AND TCLP LEACHATES OF SUBSURFACE SOIL (PPB).

	MAXIMUM WATER CONC (A)	MAXIMUM SOIL CONC (B)	MAXIMUM TCLP CONC (B,C)
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CARCINOGEN

ARSENIC	310	44,000	
BENZENE	8	ND	
BIS(2-CHLOROETHYL)ETHER	14,000	33,000	
BROMODICHLOROMETHANE	7	ND	
CHLOROFORM	49	ND	2
1,2-DICHLOROETHANE	350,000	10,000	810
1,1-DICHLOROETHYLENE	11	ND	
METHYLENE CHLORIDE	8	71	1
1,1,2-TRICHLOROETHANE	11	ND	
TRICHLOROETHYLENE	10	ND	
VINYL CHLORIDE	90	ND	

NON-CARCINOGENS

ACETONE	89,000	31,000	150
BARIUM	2,290	190,000	760
BERYLLIUM	120	800	
CADMIUM	114	3,000	
CHROMIUM (VI)	55	427,000	
1,2-DICHLOROPROPANE	29,000	100,000	19
ETHYL BENZENE	1,500	1,700	33
MANGANESE	1,400,000	964,000	5900
NICKEL	5,190	23,000	30
4-NITROPHENOL	13,000	ND	
SELENIUM	27	4ND	
TOLUENE	6,000	30,000	62
XYLENES (MIXED)	3,800	11,000	95
ZINC	14,900	99,200	71

A - DATA FROM PUBLIC HEALTH EVALUATION IN FS REPORT, SEPTEMBER, 1988.

B - DATA FROM SUPPLEMENTAL RI REPORT FOR SECOND OPERABLE UNIT, MAY 1990. ALL MAXIMUM VALUES
OCCURRED IN SAMPLES TAKEN AT 10 FEET OR BELOW.

C - ONLY SAMPLES COLLECTED AT 12-18 FEET BELOW SURFACE WERE SUBJECTED TO TCLP ANALYSIS.

TABLE 4

SITE-RELATED CARCINOGENS OF POTENTIAL CONCERN AT THE NATIONAL STARCH AND CHEMICAL CORPORATION
SITE SALISBURY, NORTH CAROLINA

MAXIMUM ESTIMATED OBSERVED WORSE CASE CONCENTRATION INTAKE

(A) COMPOUND (UG/L)(MG/KG/DAY)

1,2-DICHLOROETHANE 350,000 1.00(E+01)
BIS(2-CHLOROETHYL)ETHER 14,000 4.00(E-01)
ARSENIC310 8.86(E-03)
VINYL CHLORIDE90 2.57(E-03)
1,1-DICHLOROETHYLENE11 3.14(E-04)
CHLOROFORM49 1.40(E-03)
1,1,2-TRICHLOROETHANE 11 3.14(E-04)
BROMODICHLOROMETHANE 7 2.00(E-04)
BENZENE8 2.29(E-04)
TRICHLOROETHYLENE 10 2.86(E-04)
METHYLENE CHLORIDE 8 2.29(E-04)

WORSE CASE NUMBER EXCESS EXCEEDING CPF

(B) CANCER DETECTION(MG/KG/DAY)(-1)RISK (C)LIMIT (D) COMPOUND

1,2-DICHLOROETHANE 9.10(E+02)9.10(E-01)18
BIS(2-CHLOROETHYL)ETHER1.10(E+00)4.40(E-01) 7
ARSENIC1.50(E+00)1.33(E-02)13
VINYL CHLORIDE 2.30(E+00)5.91(E-03) 3
1,1-DICHLOROETHYLENE 5.80(E-01)1.82(E-04) 1
CHLOROFORM 8.10(E-02)1.13(E-40) 4
1,1,2-TRICHLOROETHANE5.73(E-02)1.80(E-05) 2
BROMODICHLOROMETHANE 8.10(E-02)1.62(E-05) 1
BENZENE5.20(E-02)1.19(E-05) 1
TRICHLOROETHYLENE1.10(E-02)3.14(E-06) 1
METHYLENE CHLORIDE 7.50(E-03)1.71(E-06) 2

(A) THE ESTIMATED WORSE CASE INTAKE DOES NOT REPRESENT ANY REAL EXPOSURE SCENARIO AT THE SITE. IT IS BASED ON A 70 KG PERSON DRINKING 2 LITERS OF WATER PER DAY FOR THEIR ENTIRE LIFE FROM THE MONITORING WELL CONTAINING THE MAXIMUM OBSERVED CONCENTRATION OF A CHEMICAL. THIS HYPOTHETICAL EXPOSURE SCENARIO IS USED TO RANK RELATIVE TOXICITY BASED ON THE INHERENT TOXICITY AND THE MAXIMUM DETECTED CONCENTRATION OF EACH CHEMICAL. THIS ASSUMPTION ASSISTS IN IDENTIFYING THOSE CARCINOGENS THAT HAVE THE GREATEST POTENTIAL TO POSE A HAZARD WITH FREQUENT EXPOSURE OVER THE NUMBER OF YEARS.

(B) CPF OR POTENCY FACTORS WERE OBTAINED FROM THE SUPERFUND PUBLIC HEALTH EVALUATION MANUAL, EPA 1986.

(C) WORSE CASE EXCESS CANCER RISK IS DERIVED FROM THE EQUATION: $ECR = CPF \times DOSE =$ ESTIMATED WORSE CASE INTAKE.

(D) INDICATES THE NUMBER OF SAMPLES OUT OF 38 THAT EXCEED THE ANALYTICAL DETECTION LIMIT FOR THAT CHEMICAL.